TRAPPED!

Between the Devil and Deep Waters

Dinesh Kumar Mishra

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New Delhi

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Publishers' Note

In recent years the rapid growth in India's annual GDP has emboldened the country's decision-makers and opinion-makers to push for mega projects in the name of development at an accelerated pace. These include the inter-linking of rivers, hundreds of dams in the Himalayan states, urban renewal, the golden quadrilateral, special economic zones, etc. Announcements of these projects have generated heated debates and sustained protests from those whose lives will be dramatically altered for all times, supported by environmentalists, intellectuals and other concerned citizens. In each case, the powers-that-be appear determined to strike down the dissent and continue with their adventures.

Dr. D.K. Mishra's book "TRAPPED! Between the Devil and Deep Waters" is a timely interjection in this situation. He describes in vivid detail how some of India's most respected engineers, after independence, ignored over 100 years of debates that consistently rejected the idea of embanking a ferocious river like the Kosi and chose to sing the tune of their political masters. To build his case, Dr Mishra has meticulously collected information on all aspects of the issue – scriptures, legends of the Kosi, folklores, history of attempts to tackle floods in India, the efforts and debates to tame the Kosi, the decision-making process, the construction process, the scams, the outcomes and the aftermath.

But above all Dr Mishra's book is about the lives of almost a million people who have become victims of the Kosi Project. For over two decades, Dr Mishra traveled to distant villages and recorded the testimonies of the victims, of engineers – including a number of Chief Engineers who shared their dilemmas, politicians and activists to discover the hows and whys of this developmental tragedy. This book will be a basic reference for all those concerned about such projects and also all future scholars wishing to research the subject.

Dr Mishra, a civil engineer out of IIT-Kharagpur, presents difficult technical issues in a very lucid manner which even a novice can understand. The people's testimonies highlight the dimensions of the tragedy, the politics of development and the ethics of the decision-makers. Even as he highlights the total disillusionment of the intended beneficiaries, Dr. Mishra talks about the alternative that are possible for the community to live in harmony with the river and its floods.

Peoples' Science Institute (PSI) has been interested in the alternative models of living with the floods. In 1992 it studied the drainage problem of the Kosi basin in great detail in an attempt to understand possible solutions to the Kosi floods. PSI has published Dr. Mishra's widely acclaimed book 'Living With the Politics of Floods' in 2002 and the original Hindi edition 'Dui Paatan Ke Beech Mein – Kosi Nadi Ki Kahani' of the present book in 2006.

South Asia Network of Dams, Rivers and People (SANDRP) has always focused on the planning, decision making, implementation and outcomes of large water projects and the promises made to the people before such projects are begun. Accountability in relation to the stated objectives of a project is a crucial factor in development and that is the undercurrent in Dr. Mishra's writing.

We hope that this book will be useful on all these fronts.

Himanshu Thakkar
SANDRP
New Delhi

Ravi Chopra
PSI
Dehra Dun

Preface

It was the beginning of winter in 1993. A professor at the Department of Disaster Management, Oxford Polytechnic, United Kingdom was in India. He was a world-renowned scholar of disaster management. An organization in Calcutta had requested him to conduct a training course on disaster management and I was invited to join the course as a participant. I requested the organizers to ask the professor if he could spend a day with me in north Bihar before the start of the course so that we could benefit more from his vast knowledge of the subject. He very kindly agreed to the request and we spent a night at the inspection bungalow in Jhanjharpur, Madhubani district. The next day we proceeded to Ghonghepur, the terminus of the western Kosi embankment. All along the way, he kept asking me questions about the river and its floods and I tried to answer them to the best of my ability.

We ascended the western Kosi embankment near Bheja village. South of it the Kosi was on our left and the Kamla-Balan on our right. Ghonghepur is situated 31km south of Bheja. After reaching Nima village in Darbhanga district, the devastation caused by the floods of the two rivers became obvious. After driving for about two hours through the dusty and bumpy crest of the western Kosi embankment, we stood at the 54th km stone where the western Kosi embankment ended. It was November but there was water everywhere. Boats were plying on the east, between the two embankments of the Kosi. The situation in the so-called protected countryside on the west was no different either. The western embankment with some huts of villagers from Ghonghepur stood out in the water like a wedge.

The sudden termination of the embankment here causes a backflow of the Kosi waters that floods many villages along the embankment. When the victims protested, the government constructed a T-spur south of Ghonghepur in 1969 so that the backflow of the water could be prevented. It served its purpose of intercepting the Kosi and preventing it from moving backwards but it simultaneously blocked the Kamla Balan, which used to join the Kosi further downstream. Thus the villages that were earlier flooded by the Kosi were now being submerged in the Kamla-Balan waters. Slowly, the T-spur too became defunct but nearly 52 villages got trapped in the waters of the two rivers and boats used to ply almost round-the-year in the area.

I told the professor that he must have faced similar situations in many parts of the world and asked if he could tell me how to arrange for potable water under the prevailing circumstances. He looked at the sky, as if the heavens would answer him. Breaking his silence after a while, he said, "Mishra, this is beyond redemption."

During our return journey to Calcutta, the professor asked me many questions about the river and its embankments and expressed surprise that a large number of people were living permanently within the river's embankments. That day it was decided in the presence of many friends that a document would be prepared about the river and the plight of the people living within the embankments. That day we also finalized the title of the book that first appeared in Hindi.

Ghonghepur is just one example. There are many villages in north Bihar where one has to look towards the heavens to find any solution to the problems faced by the people. Experts have no answers to these questions as they have gone beyond the boundaries of disaster management.

I first saw Ghonghepur in 1984 when I camped at Saharsa following a breach in the eastern Kosi embankment at Navhatta. I was running a relief program for the breach victims. After that, I visited the place many times and whenever a request came to me to show a flooded area, I always advised the person to visit Ghonghepur where one would be at the end of one's wits. I have acted as a guide to many, taking them to Ghonghepur. Some land has emerged there in the recent years where rabi cropping has become possible because of sedimentation by the Kamla-Balan. Otherwise, for about 40 years after the construction of the Kosi embankments, this place is under a sheet of water round-the-year. Bihar's Water Resources Department may claim credit for the sedimentation and emergence of land near Ghonghepur, but the fact remains that all this has happened unintentionally. Sedimentation brings its own problems. It has impeded the flow of the Kamla-Balan and the Gehuma and this obstruction has

aggravated the drainage congestion upstream. It takes longer for the water to get drained or percolate into the ground. Flooding is a seasonal event in these areas but waterlogging has become a permanent feature.

The entire area is criss-crossed by many rivers. After independence, the government has tried to embank most of them resulting in a total disruption of the natural drainage. Now the situation in various river basins in north Bihar is that the river beds have risen high enough within the embankments to create problems in the protected countryside, resulting in acute waterlogging. Frequent breaches in the embankments compound the problem as they result in massive sand casting outside the embankments. People have started cutting them to get rid of the unwanted water. Rising population and shrinking land has led to a collapse of the local production processes and pushed out people to distant destinations in search of employment. All the social distortions that can be imagined in an agrarian and cattle- based economy plague the area.

In this book I have attempted to study the development of the flood control program in the Indian portion of the Kosi River with particular reference to the post-independence period. Kosi is noted for its vagaries. It posed serious problems for the British revenue collectors and they called it 'the sorrow of Bihar'. The local people, however, continue to adore it as their mother. I have attempted to cover all aspects of the river, from scriptures to legends and its geographical features. The study covers the life-supporting role of the river but does not ignore its frightful behaviour at times. I have attempted to detail the debate of taming the Kosi that have gone on over centuries. The consequences of the subsequent taming of the river over this period also form a part of the text. The options that are still open before the society and the people to deal with the river are discussed at the end.

About 380 villages are trapped between the two embankments of the Kosi where around a million people are subject to its onslaughts every year. A complete list of these villages and the details of the population entrapped within was not available. I have tried to fill this gap. This population was relocated in the protected countryside but they had to return to their old villages. This book tries to take stock of their plight and the options that are still open to them.

The preferred official approach to solving the floods problem in Bihar is to construct dams in Nepal. The first proposal to build a dam on the Kosi at Barahkshetra was made in 1937. But offices were opened only in 2004 at three places in Nepal to prepare its feasibility report, after a lapse of 67 years! That shows the pace of the work and it is hard to assess when the benefits of flood control will actually reach the people. Many already doubt whether such an initiative will be at all effective in controlling floods, as a large part of the river's catchment lies below the proposed dam site.

Issues related to the cost of power and the rehabilitation of the people likely to be displaced by such structures are yet to be resolved between the two countries. In the absence of any agreement on these core issues, the project is likely to linger indefinitely. The embankments constructed along Bihar's rivers have not yielded the desired results and there is little hope of construction of the proposed dams in the near future. It was expected that the Government of Bihar would explain the situation to the engineers handling water issues in the state and ask them to find a tangible local solution but that was not to be.

The illusion created by the proposed dam at Barahkshetra in Nepal has blurred the vision of the politicians and engineers and their thinking process is stalled on that point. There is a sense of unqualified dependence on this dam. That has been the situation for the past 70 years. Is it possible then that the villagers will themselves come forward to devise means to face the annual floods? Will their traditional wisdom and live experience with the rivers be of any help? If the floods could be tackled locally (this is being done even otherwise) then there would be one definite advantage that whenever the question of building a dam at Barahkshetra acquires serious proportions, there will not be any need for providing flood cushion in the dam and its storage capacity and the height could be reduced accordingly. This, eventually, could lead to reduction in its cost, greater self reliance and freedom from observing the annual ritual of chanting the Barahkshetra Dam mantra.

The failure of river embankments and the uncertainty linked to the construction of the proposed dams in Nepal forces the government to run relief programs but the problem is so vast and the resources to provide relief so meager, that nearly 85 to 90 per cent of the flood victims remain untouched by the relief programs, according to a submission by the government. This reduces the relief programs to a mere formality, most of which is manipulated by the powerful people.

Plans are afoot these days to streamline relief distribution. As a first step in that direction, the Relief and Rehabilitation Department has been renamed as the Disaster Management Department. It is expected to look into disaster preparedness, disaster mitigation and post-disaster rehabilitation programs also. The Irrigation Department was renamed as the Water Resources Department but if by changing the names of department peoples' problems could be solved, then this objective would have been achieved long ago. But there are hardly any visible changes at the field level.

The embankments built in the middle of the last

century have breached six times so far. A chapter on these accidents covers all the events that preceded each tragedy till the mud-slinging that follows as an essential aftermath of such accidents. No lessons are learnt nor are any efforts made to avoid the mistakes that lead to such events. A review of these breaches reveals how a welcome flood is converted into a disaster. There is no debate whether the flood is natural or manmade. People in the Kosi basin can easily identify the men responsible for it. There cannot be a better place to understand the conversion of welcome floods into disasters than the Indian portion of the Kosi River.

As the floods get converted into disasters, they need to be mitigated and managed. There is a sudden spurt in the number of disaster management agencies, governmental and non-governmental, local and foreign, to train flood victims in disaster management. They do not see floods in totality and refuse to accept that the floods help rejuvenate the fertility of the soil, maintain ground water levels and allow the river to fulfill its duty of land building and delta formation. They also forget that rivers have been instrumental in the evolution of civilizations, culture and a definite way of life that is not found elsewhere and that all this is due to the abundance of water and fertile soil. It is not for nothing that the population density in such places is around 1000 persons per square kilometer. Ignoring this aspect of the existence of rivers, one government department creates disasters in the name of flood control and another manages them. The government and most of the NGOs, along with their donors, do not take cognizance of the reality that the rivers are becoming more and more unmanageable because of the faulty policies of dealing with them. There is no dialogue between the river tamers and the disaster managers. The result is that the flood makers and the disaster managers complement each other as far as floods are concerned.

Now when an embankment breaches, causing widespread devastation in the protected countryside, the government, the disaster managers of all varieties and most of the NGOs get together to manage the situation. This is perfectly in tune with the prevailing need as it is not the time to debate but to concentrate on helping people in distress. What intrigues one is that even after the emergency is over, there is no dialogue on the causes of the 'disaster' and without learning any lesson preparations begin to face the next disaster in the next season at the same place. That leads one to doubt the motives of these organizations, some of which bluntly say that it is not their job to go into the causes of any disaster and that they are only there to help the people in distress. Their intervention exonerates those responsible for the tragedies and shuns any possible debate over the real issues. If this becomes a tradition, then floods are here to stay.

As far as government departments are concerned, if they are able to spend the money that is allocated to them, they feel entitled to a pat on their back. It really does not matter how and where the money is spent. This is true of mismanaging relief by the Disaster Management Department and evading repairs of the embankments and erosion works by the Water Resources Department. The infamous relief scam of Bihar in 2004 is just an example and may only be the tip of the iceberg.

Gathering information was an uphill task as the book was written mostly in the pre-Right To Information period. However, various debates and reports of the Lok Sabha and the Vidhan Sabha filled in the gaps and were very useful in developing the logic. These are the institutions where public representatives speak, governments reply and the proceedings are available for the public. I have made full use of this facility. There was not much option either. Having done that, I have tried to verify facts in libraries, talked to various officers of the state and recorded the versions of the flood victims. To get closer to reality, I had to iterate the process several times. Many retired engineers and elderly persons in villages, whom I have quoted widely, helped me in untying various knots and I was lucky to have begun this work when many of these elderly persons were still alive. A little delay in collecting information would have rendered the story incomplete or unreliable.

I do hope that the book answers many questions and raises an equal number of its own. If it helps polish the questioning ability of the flood victims, I will treat that as my success.

Jamshedpur *Dinesh Kumar Mishra*
Date 25th July 2008

Acknowledgements

This book is based on my doctoral work done at the Veer Narmad South Gujarat University, Surat (2000-04). I take this opportunity to thank the Vice-Chancellor and the Registrar of the University for kindly permitting me to publish my work. I express my great sense of gratitude to Prof. Satendra Kumar, Former Dean and Head, Department of Business and Industrial Management of the university for guiding me in my work.

I have been active on the issue of floods in Bihar since 1985 and had my maiden discussion over the issue with Akhauri Parmeshwar Prasad, a former Chief Engineer of the Irrigation Department of Bihar on September 25, 1985, courtesy Raghupati of Patna. I still have the recorded cassettes of that discussion with me. It never occurred to me at that time that I would ever write a book on the floods issue but as my interest in the subject grew, I had the opportunity of discussing the same with Awadh Kumar, Dinesh Prasad Verma, C.K. Pandey, Y.N. Singh, Basawan Singh and Amal Dasgupta, all former Chief Engineers of the Water Resources Department of Bihar. I was also privileged to learn many things from veteran engineers like Prof. C.P. Sinha, K.N. Lal, P.N. Trivedi, Rajendra Upadhyaya, Hemant Lal Chawda and M.M. Tiwari in the recent past. I am grateful to all of them for the time that they spent with me.

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I am grateful to my elder brother Dr. Kailash Kumar Mishra and sister-in-law Janki Mishra for the encouragement that they gave me during while writing this book.

Abbreviations

BDO	Block Development Officer
BJP	Bharatiya Janta Party
BPCC	Bihar Pradesh Congress Committee
BSS	Bharat Sevak Samaj
cr	Ten million
CRF	Calamity Relief Fund
Cumec	Cubic meters per second
Cusec	Cubic feet per second
CWINC	Central Water Irrigation and Navigation Commission
CWC	Central Water Commission
CWPC	Central Water Power Commission
DPR	Detailed Project Report
DVC	Damodar Valley Corporation
EKMC	Eastern Kosi Main Canal
HMGN	His Majesty's Government of Nepal
GFCC	Ganga Flood Control Commission
GoB	Government of Bihar
GoI	Government of India
IAF	Indian Air Force
IGP	Inspector General of Police
ILR	Interlinking of Rivers
IPS	Indian Police Service
ITI	Industrial Training Institute
KHD	Kosi High Dam
KIC	Kosi Irrigation Committee
KMSS	Kosi Mukti Sangharsh Samiti
Lakh	Hunderd thousand
Lh	Lakh hectares
Mha	Million hectares
ML	Marxist Leninist
MLA	Member of Legislative Assembly
MLC	Member of Legislative Council
MP	Member of Parliament
MoWR	Ministry of Water Resources
MW	Megawatts
NCCF	National Calamity Contingency Fund
NDA	National Democratic Alliance
NGO	Non-Governmental Organization
NHRC	National Human Rights Commission
NWDA	National Water Development Agency
PAC	Public Accounts Committee
PWD	Public Works Department
RD	Reduced Distance (1000 feet)
RJD	Rashtriya Janta Dal
SBSIC	Second Bihar State Irrigation Commission
SDO	Sub-Divisional Officers
UPA	United Progressive Alliance
UML	United Marxist Leninist
UNDP	United Nation's Development Programme
USBR	United States Bureau of Reclamation
WCD	World Commission on Dams
WKC	Western Kosi Canal
WRD	Water Resources Department

Dedicated to the memory of my parents.

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1
Kosi : An Introduction

The Kosi is one of the most vibrant and lively rivers of Bihar. Noted for its meandering nature, the Kosi has shifted its course from Purnea in the east to Darbhanga district in the west. It is at the centre of any flood debate in India. Attempts to tame the river have always been a challenge to engineers and they still remain in search of a lasting solution. To get a hint of the source of the river's destructive powers, one may have to take recourse to mythology. There are many legends – folklore, myths and stories – about the origins of the Kosi River. Some of the well-known ones are recounted here.

1.1 The Legends of Kosi

Kaushiki

An eminent ascetic named Richeek, of Bhrigu's lineage, was given to deep meditations. Once he went to the palace of King Gaadhi, son of King Kushika of Bharat's dynasty, and asked for his daughter Satyavati's hand. Gaadhi was a king and Richeek an indigent brahmin. Hence the king turned down the proposal. But as Richeek was leaving, the king told him that if he could present him a thousand horses, as fair as the moon, as swift as the wind and with one dark ear, then he would accept his proposal. The king was sure that Richeek, being a poor brahmin would not be able to arrange such horses and thus he would be saved from marrying the princess to Richeek. The latter, however, beseeched the god Varun for such horses, who made them available through the River Ganga. Legend has it that Asvatirtha is the place in Kannauja, on the banks of the Ganga, where the river delivered the horses to Richeek. Richeek went to the king, who never believed that he would be able to arrange them, with the thousand horses. The king kept his word and gave his daughter in marriage to the poor and aged Richeek.

Satyavati was the only daughter of King Gaadhi and she deeply longed for a brother. Her mother told her that Richeek was a great ascetic and she could be blessed with a brother through his grace. Satyavati strove to please Richeek who then prepared two separate potions of *prasada*. He asked her to give one to her mother and eat the other one herself, saying that her mother would have a meritorious kshatriya son and she herself would be blessed with a virtuous and brilliant son who would further the Bhrigu lineage. Satyavati's mother, however, thought that Richeek would have made a better and more potent potion for Satyavati in order to have an excellent son. So she switched the potions. Later the queen bore a son of glorious brahminical virtues who grew up to be the renowned sage Visvamitra. Satyavati now trembled at the very thought of a son of kshatriya, warrior-like, temperament. She implored Richeek to give her a virtuous son of calm temperament. He, however, said that boon could not be undone. But Satyavati was persistent and relenting a bit, Richeek said that she would have a grandson of violent kshatriya disposition but not a son with those qualities. Then Richeek blessed her once again with his grace and a son of auspicious virtues called Jamadagni was born to her. She did, however, have Parsuram as a grandson who had a highly volatile temperament.

As they were descended from Kushik, Satayavati was called Kaushiki and Visvamitra was also known as Kaushika. When Kaushiki, the elder sister of Visvamitra, died she took the form of River Kaushiki, whom we now refer to as Kosi. Years later when Visvamitra was moving from Ayodhya towards Sonebhadra (the River Sone) with Rama and Lakshamana, he acquainted the two princes with his elder sister. The verses relating to this episode appear in Valmiki's Ramayana. This episode is narrated in the Bal Kaand section as:

पूर्वजा भगिनी चापि मम राघव सुव्रता
नाम्ना सत्यवती नाम ऋचीके प्रतिपादिता । 7 ।

सषरीरा गता स्वर्गे भर्तारमनुवर्तिनी
कौषिकी परमोदारा प्रवृत्ता च महानदी । 8 ।

दिव्या पुण्योदका रम्या हिमवन्तमुपाश्रिता
लोकस्य हितकार्यार्थे प्रवृत्ता भगिनी मम् । 9 ।

ततोऽहं हिमवत्पार्श्वे वसामि नियतः सुखम्
भगिन्यां स्नेह संयुक्तः कौषिक्यां रघुनन्दन । 10 ।

सा तु सत्यवती पुण्या सत्ये धर्मे प्रतिष्ठिता
पतिव्रता महाभागा कौषिकी सरितां वरा । 11 ।

अहम् हि नियमाद् राम हित्वा तां समुपागतः
सिद्धाश्रममनुप्राप्तः सिद्धोऽस्मि तव तेजसा । 12 ।

"O Raghava, I had an elder sister who was eminently virtuous. She was called Satyavati. She had been married to the sage Richeek.

"Entirely devoted to her spouse, Satyavati's body departed to the heavens. But on Earth, she began to flow in the form of the munificent river Kaushiki.

"It is for the good of the world that this sister of mine flowed in the form of a river from her refuge in the Himalayas. It is indeed a charming river of divinely holy waters."

"O Raghunandan, I have great affection for my sister Kaushiki and hence I dwell regularly and ever so happily on her bank itself, close to the Himalayas."

"The virtuous Satyavati is renowned as the dutiful. That extremely fortunate and pious lady is present here in the form of the glorious river Kaushiki."

"O Rama, I had come away from my sister to Siddh Ashram for perfecting the true mode of sacrificial worship. Now I have attained that perfection by the virtue of your splendour."

- (Valmiki Ramayana, Bal Kaand, verses from Chapter 34, Gita Press, Gorakhpur)

Since Kausihka Visvamitra was born in a kshatriya family, he performed severe meditation for a thousand years at Pushkartirtha in order to become a *rishi* (sage). Even when the Gods blessed him as a rishi, he did not break his meditations. Indra, the king of the gods, became apprehensive of Visvamitra's powers and sent the charming *apsara* Menaka to distract him. Menaka knew Visvamitra's merits quite well. So, when Indra ordered her to tempt Visvamitra she expressed her fears before the king of the gods, describing Visvamitra as:

शौचार्थं यो नदीं चक्रे दुर्गमां बहुभिर्जलैः
यां तां पुण्यतमां लोके कौशिकीति विंदुर्जनाः।

"(Visvamitra is the seer) who has created that fathomless and impassable river for his ablutions which is known in this world as the exceedingly holy River Kaushiki."

- (Mahabharat, Adi Parwa, 61/30, Gita Press, Gorakhpur)

Menaka was frightened of Visvamitra. Thus she said to Indra, "You too, are aware how wrathful he is." But later that doyen of *rishis* could not resist Menaka's bewitching charms. Thus Menaka performed her assignment and served the designs of the gods. She gave birth to a daughter by Visvamitra whom she abandoned on the banks of the Malini River. The child later came to be known as Shakuntala, immortalized by the poet Kalidasa. After spending almost ten years with Menaka, Visvamitra realized in a rage that he had been tricked by the gods. He felt pity on his own condition, too. He bid adieu to Menaka and came down to the banks of his sister Kaushiki for a thousand year-long meditation. If his meditation at the holy Pushkar shrine made him a *rishi*, he became a *maharishi* on the banks of the Kaushiki. Now he had conquered the god of desire. But Kaushiki remained an irresistible attraction for him. For instance, after Rama's wedding, he went straight to his hermitage on the banks of Kaushiki.

Kaushiki-The Form of *Shakti* (Primal Power)

There is another legend regarding the origin of Kaushiki in the Markandeya Purana. Shumbha and Nishumbha were two demon brothers. They performed severe meditation and usurped the kingdom of the gods. They tormented the gods, stole whatever they had and finally exiled them. Devoid of their kingdom, the gods went to the Himalayas and prayed to the great goddess Bhagvati. Propitiated by their deep devotion, the goddess Parvati asked them about the distress that had brought them there. At that very moment, Shiva emerged (as a goddess) from the body of Parvati and said to her,

षरीरकोषाद्यत्तस्याः पार्व्वत्या निःसृताम्बिका
कौषिकीति समस्तेषु ततो लोकेषु गीयते।।

तस्यां विनिर्ग्वतायान्तु कृष्णाभूत्सापि पार्व्वती
कालिकेति समाख्याता हिमाचल कृताश्रयाः।।

" Shumbha and Nishumbha defeated these gods in a war and exiled them. Hence they have gathered here and are praying to us for redemption." The Purana also says, "As (the goddess) Shiva emerged from the *kosha* (cells) of Parvati's body, she came to be known as Kaushiki in the world. When Kaushiki appeared from Parvati's body the latter turned dark and started dwelling in the Himalayas under the name of Kalika."

Death's Penance

This story is from the Mahabharata epic. Once there was no death in the world – all the creatures merely lived and lived. For some time, things were all right but later Brahma felt that if no one died, it would lead to great disorder. To reduce Earth's burden, Brahma used all his skills to create Death. Death took the form of a woman of red and yellow complexion adorned with golden earrings and other ornaments. She, however, was loath to perform the frightful task assigned to her by Brahma. She repeatedly appealed for exemption, but to no avail; she performed severe penances to propitiate Brahma. She even took refuge

in the Kaushiki River. Vedvyasa narrates in the Mahabharat:

> 'सा पूर्वे कौशिकीं पुण्यां जगाम नियमैधिता
> तत्र वायु जलाहारा च चार नियमं पुनः।'
>
> " And then holding fast to the norms of (her) vow, Death first went to the banks of the river Kaushiki. She subsisted there on air and water and again started performing strict observances."
>
> ***- (Mahabharat, Dronaparva, verse 54/22, Gita Press, Gorakhpur)***

But she did not succeed in her mission to be exempted from being the frightful extinguishing agent and finally she had to obey the commands of Brahma. It is indeed intriguing why the sage Vedavyasa chose the Kosi River as the site of Death's penance.

1.2 The Kosi River

The Kosi starts its journey at a height of about 7000 meters(m) in the Himalayan range and its upper catchment is located in Nepal and Tibet. The highest summits of the Everest and Kanchanjunga ranges form a part of the Kosi's watershed. The river is also called the Sapta (seven) Kosi in Nepal, because of its seven tributaries — Indravati, Sun Kosi or Bhot Kosi, Tamba Kosi, Likshu Kosi, Doodh Kosi, Arun Kosi, and Tamar Kosi. The first five rivers join to form the Sun Kosi that flows from west to east. These rivers descend from the Gauri Shankar and the Makalu ranges. The sixth stream is called the Arun Kosi and Sagarmatha (Mount Everest) is located in its catchment. The seventh stream, Tamar Kosi, flows from east to west and brings the Kanchanjunga waters with its flow. The Sun Kosi, Arun Kosi and Tamar Kosi join at Triveni in Dhankutta district of Nepal and assume the names Sapta Kosi, Maha Kosi or the Kosi (Fig.1.1). Triveni is located within the hills, about 10 kilometers(km) north of Chatra, where the river descends into the plains.

After entering the plains, the bed of the Kosi widens drastically and it spreads over 6 to 10 km. After traversing a distance of about 50 km in Nepal, it enters Indian territory at Bhim Nagar. Hanuman Nagar, located on the west bank of the Kosi, is in Nepal while on the east bank, Bhim Nagar lies in the Indian district of Supaul. From Bhim Nagar the river flows in a southwesterly direction for about 100 km till it reaches Mahishi in Saharsa district of Bihar. From Mahishi, it turns southeast and after flowing another 33 km, it crosses the Saharsa–Mansi rail line, south of Kopadia railway station, and joins the Ganga near Kursela in Katihar district. The Kosi is one of the important rivers of Bihar and its present path is shown in Fig. 1.2.

The total catchment area of the Kosi is 74,030 sq.km., not including the catchment areas of its two important tributaries, the Kamla (7,232 sq.km.) and the Bagmati (14,384 sq.km.). These tributaries of the Kosi are important in themselves and are generally dealt with separately. Out of the total catchment of the Kosi, only 11,410 sq.km. is located in India and the rest 62,620 sq.km. lie in Nepal or Tibet. Its catchment area at Triveni is 59,550 sq.km. The average rainfall in the upper catchment of the Kosi is 1589mm while in the lower areas it is 1323 mm.

The Kosi's Changing Courses

Geologically, the Himalayan ranges are in a nascent stage of their formation and many of them are only heaps of loose soil. It will take millions of years for this soil to become hard rock. The mountains are tectonically active and earthquakes are very common in these ranges, leading to landslides and avalanches. As rain falls on the loose soil, the running water easily erodes

Fig. 1.1 : Sketch map of the upper reaches of the Kosi

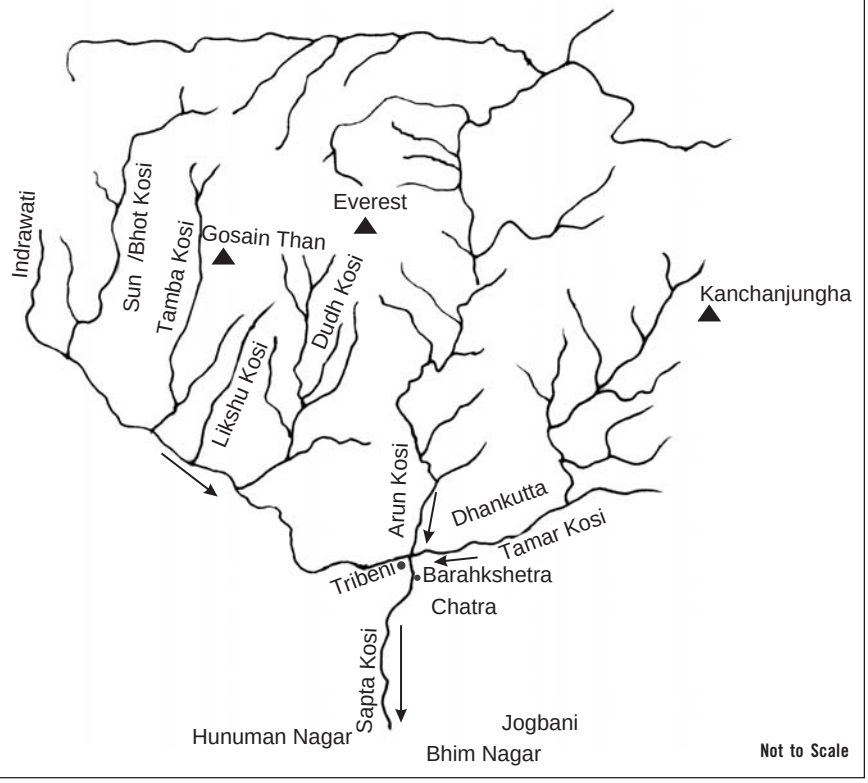
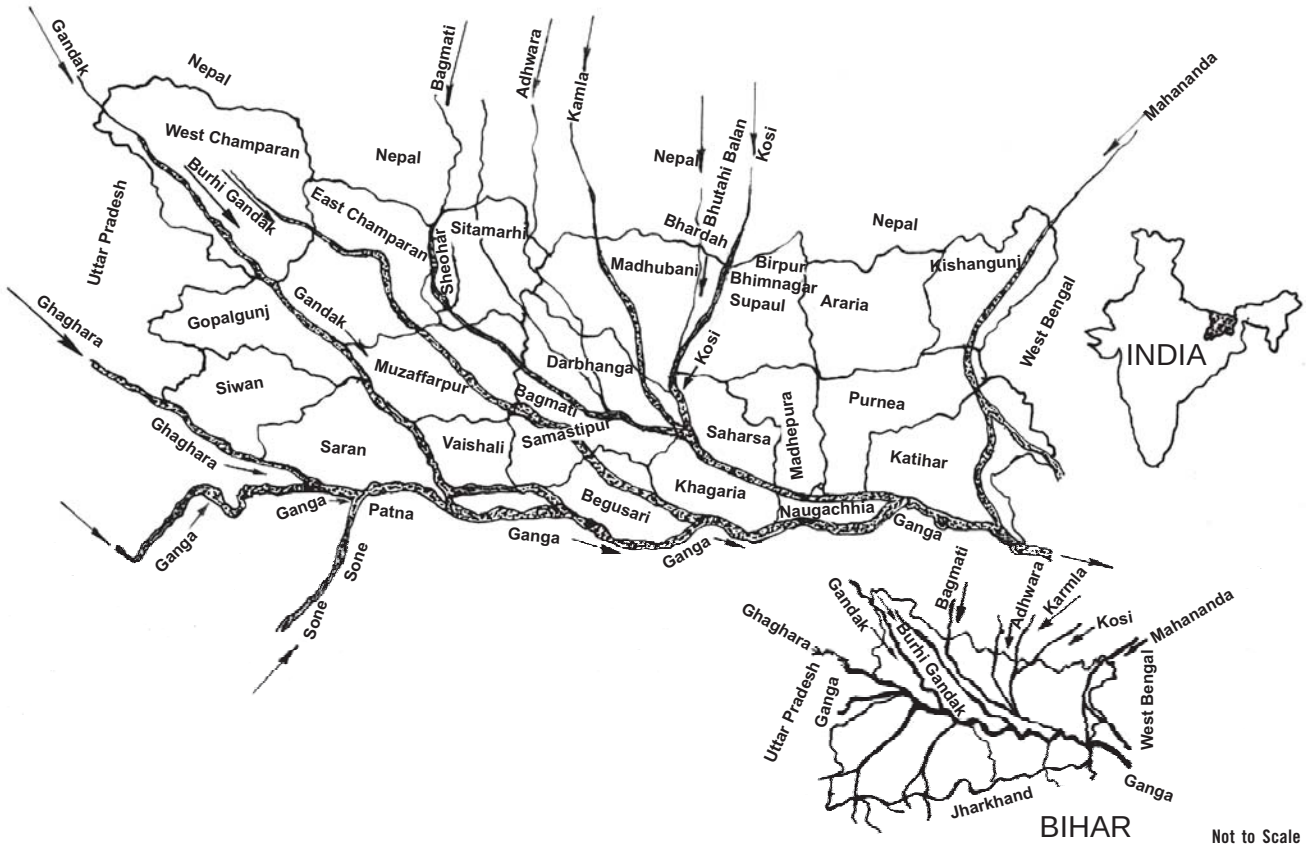


Fig. 1.2 : Map showing location of North Bihar and its rivers



it and because of the steep mountain slopes the soil quickly reaches the plains where the land and the slopes flatten out. This reduces the velocity of the flowing water and permits the sediments to settle. This is how rivers generally perform their task of land building. The soil deposited in the plains sometimes impedes the smooth flow of the river leading to changes in its course. The process of land building is further accelerated by geological activities in the mountains.

The sediment load of the Kosi is quite high and has been a part of the river flow since ages. Engineers have tried to measure the amount of its sediment load. In 1908 Capt. F.C. Hirst estimated that the Kosi brought 55 million tons of silt every year of which 37 million tons, or roughly 19.6 million cubic meters, would spread over the countryside.[1] According to the Second Irrigation Commission of Bihar (1994), the present annual sediment load in the Kosi at Barahkshetra in Nepal, is estimated at 92.5 million cubic meters. Of this about 20 per cent is coarse sand, 25 per cent is medium sand and the remaining 55 per cent is fine silt and sand.[2] The amount of sediments that annually come down the Kosi can be assessed from the fact that if a wall of one meter by one meter cross-section is constructed with them, it will go nearly two and half times round the equator. The sediment load of the Kosi creates many problems. The silt deposited each year on the bed of the river impedes the flow of water in the subsequent seasons and the river often cuts across it to carve a new path for itself, thereby changing its course. This has been happening for centuries. The shifting courses of the river have aroused the curiosity of the common people and the sophisticated. This probably explains the variety of folklore, folk songs and legends about the river.

The shifting courses have attracted the attentions of historians, scientists, geographers and engineers a bit differently. They have mapped the various courses of the river, kept records and prepared reports. Based on these they have tried to find out the reasons for the meander of the river. Engineers have from time to time tried to check the river's meander. But before going into these details, let us have a look at the various courses of the river.

The earliest available map of the Kosi area is the one prepared by a British surveyor, Major James Rennel in 1779. It gives some information about the Kosi. Dr. Francis Buchanan Hamilton studied the natural diversity of Purnea district in 1809-10. The Kosi then flowed through Purnea district in an almost north-south direction and joined the Ganga west of

Karhagola. The 'natives' had shown many old streams of the Kosi to Buchanan with which the names '*burha*' (old) or '*mara*' (dead) were attached. Buchanan then concluded that the course of the Kosi must have kept changing, saying, "The tradition of the vulgar is not only supported by the above mentioned, but by the opinions of the Pundits, or natives of learning, who inhabit its banks. They indeed go still farther, and allege that in times of remote antiquity, the Kosi passed south-east by where Tajpur is now situated, and from thence towards the east until it joined the Brahmaputra, having no communication with the Ganges….I think it is not unlikely that the great lakes, north and east of Maldeh, are remains of the Kosi united to the Mahananda and that on the junction of the former river with the Ganges the united mass of water opened the passage now called Padma."[3]

But Dr. W.W. Hunter was of the opinion that though the Kosi flowed towards the east, its confluence with the Brahmaputra was doubtful because the latter had receded a lot eastward towards Mymensingh district. Before joining the Brahmaputra the Kosi must have met the Karatoya (Kartua), which also received waters from the Atreyi and the Teesta. Hunter wrote, "If we assume that the Kusi and the Mahananda formerly joined the Karatoya, we have at once an explanation of the great size once the latter river undoubtedly had; and we shall also be able to account for the process by which the great sandy plain was built up between the Barindra of Rajshahi and the Madhupur jungle of Mymensingh, through which the Brahmaputra made its way at the beginning of the century... It is interesting to observe that a river nymph of this name is known, if not worshipped , on the banks of the Karatoya."[4] Hunter also maintained that agricultural records in that area were maintained according to the Bengali *fasli* or Bihari calendars. He adds, "It is well known that these systems of computation of time are founded on the Musalman calendar, and, like it, date from Hijra or flight of Muhammad from Mecca. These systems came generally in use into the present District of Purniah about AD 1600. If the supposition be correct that the Kusi formed the boundary between the tracts in which they were in use, then the course of that river passed east of the town of Purniah."[5]

Later, C.J.O'Donnell also supported the view that the Kosi had once occupied the course of the Kartoya. He was of the opinion that the Kartoya was once a very big river with its reputation and sanctity scarcely second to the Ganga. This has been shown in Van Den Brock's map of Bengal, even as late as 1660, as a large waterway connected with the Brahmaputra. O'Donnell said "The Kartoya in the days of its real greatness was the bed of not only the Tista, but of the Kosi and of the numerous hill streams which now unite to form the Mahananda. It is well known that the Kosi formed the eastern and not, as now, the western boundary of the Bihar portion of Purneah…A mermaid goddess, named Kausika, was the tutelary deity of the Kartoya, and was worshipped all over the Matsya Desh, or the Land of the Fish, the earlier Hindu name of the country which lay between the Kartoya and the old bed of the Brahmaputra to the east of Mymensingh. Her image, half woman and half fish, has been found amongst the ruins of Mahasthan."[6]

James Ferguson, in 1863, also maintained that an old river Kosi used to join the Brahmaputra through the Atreyi, near Ur Sagar.[7] There is, however, no definite and undisputed evidence that the Kosi used to join the Brahmaputra because the Brahmaputra itself used to flow further in the east. Then if the Kosi had at anytime advanced towards the Brahmaputra, it must have passed through the Mahananda and the Atreyi. But this time period cannot be ascertained.

The Abandoned Channels of the Kosi

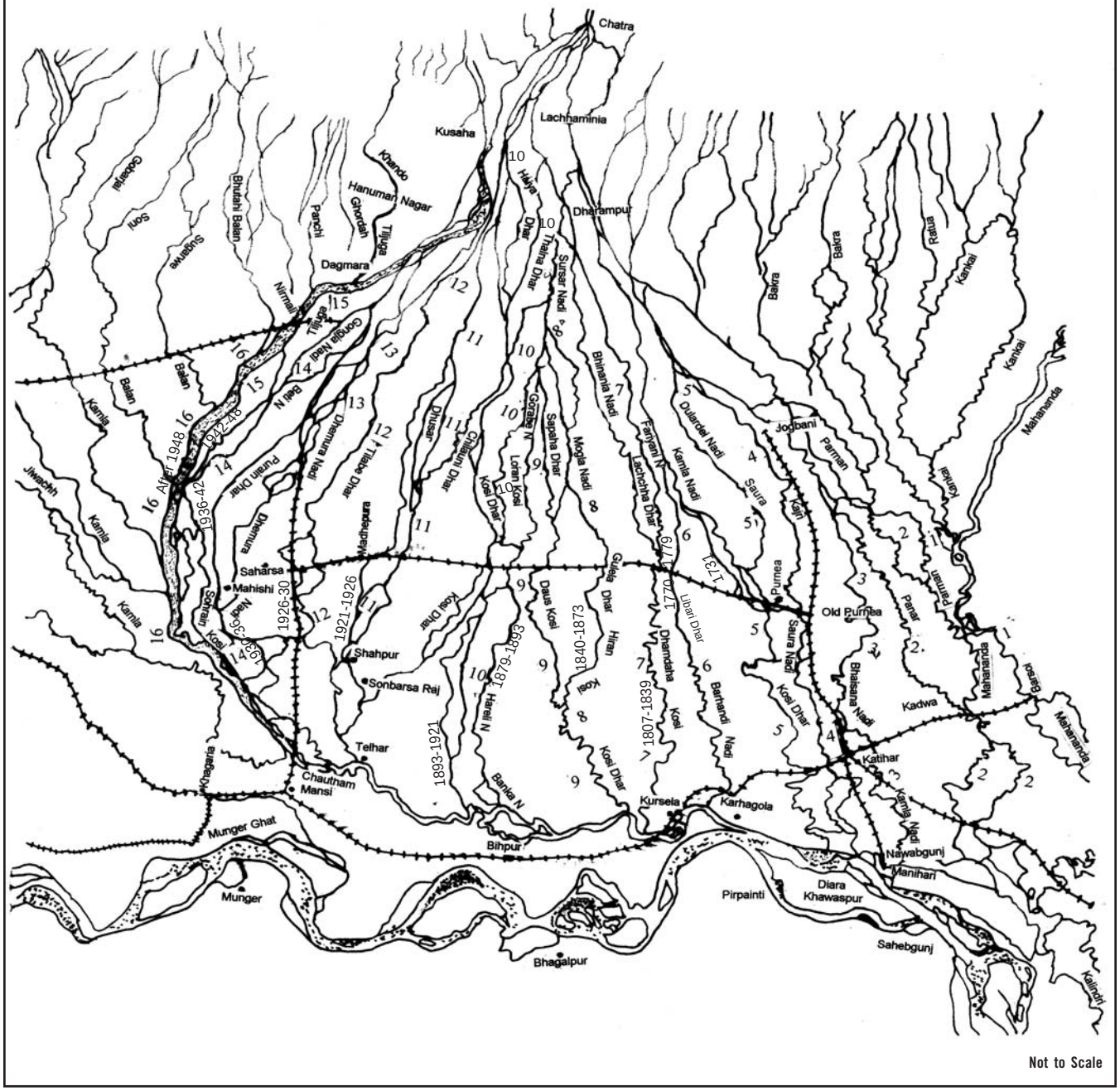
Details about the shifting courses of the Kosi are available elsewhere. Without going into them here we will briefly touch upon the different channels that the Kosi has occupied ever since the records of its flow have been kept (Fig. 1.3).

The Parman or the Panar Dhar: This is the easternmost known channel of the Kosi whose original channel used to be the Sursar Dhar of Nepal. In earlier times, this river used to spill its banks and its water used to reach the Mahananda. Slowly these rivers got separated from the Sursar or the Kosi and developed their own catchments. Now these rivers are independent and pour their waters into the Mahananda. At present, the Parman gets bifurcated 55km south of Araria. The eastern stream is known as the Parman and it joins the Mahananda south of Bagdob. The other, going west is called the Panar, or the Riga in its lower reaches. The Panar/ Riga joins the Mahananda upstream of the Jhoua bridge. These two channels used to be the main Kosi stream in the past. (See 1 and 2 in Fig. 1.3)

The Bhinsana Kosi: It is believed that this channel used to flow east of Purnea at the beginning of the sixteenth century and proceed towards Manihari. Just before reaching Manihari one of its channels used to join the Kalindi, which merged into the Ganga near Gour. This channel was also known as the Kamla in the lower reaches. (See 3 in Fig. 1.3)

The Kajri or the Kari/Kali Kosi: This channel is also known as the Kamla in its upper reaches. In Nepal it is known as Kajli or the Kajri. During the time of Akbar (1556-1605), the Kosi flowed through a channel west of Purnea town. This channel was called Kari or

Fig. 1.3 : Changing courses of the Kosi



the Kali because it was the only channel of the Kosi whose colour used to be deep but clear. The river retained this characteristic till 1889 when for the first time turbid water came into it. This was the main channel of the Kosi till 1731 and used to form the western boundary of the district. It used to join the Ganga near Manihari and this confluence was located east of Bhawanipur. The Kari Kosi flows west of Katihar town even today and joins the Ganga west of the Katihar-Manihari-Tej Narayanpur rail line. (See 4 in Fig. 1.3)

The Dulardei/ Soura Kosi: This channel of the Kosi is also known as the Sonra Dhar, Samra Dhar or the Saura Dhar. The Dulardei is a channel taking off the Saura near Jirwa village. It used to flow between the Old Purnea and Purnea town. (See 5 in Fig. 1.3)

The Kamla Kosi: In 1731, another channel of the Kosi came into being and was called the Kamla. This channel traveled southwards and adopted the path of the Kali Kosi (Rennel's Map). Purnea was located east of this channel and Dharampur, up in the north, was located west of this channel. (See 5 in Fig. 1.3)

The Libri Kosi: A new channel appeared from the Kamala, mentioned above, in 1770, south of Raniganj. It crossed the Purnea-Birnagar Road near Dima Ghat,

25km west of Purnea. Passing through the channels of the Barhandi and the Libri, the Kosi joined the Ganga south of Nawabgunj and 22km east of Karhagola. The Kosi remained in this channel till 1807. (See 6 in Fig. 1.3)

The Dhamdaha Kosi: The Dhamdaha Kosi is also known as the Faraini or Fariani Dhar in the upper reaches. The Kosi used to pass through this channel between 1807 and 1839. The map of Purnea that Hamilton had prepared showed the Lachchha-Faraini-Dhamdaha route. It crossed the Assam-Bengal State Railway between the Nath Nagar and Debigunj stations and joined the Ganga near Karhagola. This stream of the Kosi (Faraini) passes between the Sarsi and Banmankhi railway stations of the Purnea-Madhepura section and after joining another stream, the Lachchha Dhar, crosses the railway line to enter Dhamdaha Thana. (See 7 in Fig. 1.3)

The Hiran Kosi: During 1840-1847, the Kosi used to pass through the Sursar Dhar, Moghal Dhar, Gulela Dhar and the Hiran Dhar and was located 48 kilometers west of Purnea. This route of the Kosi was active till 1873. According to Col. Hague, this Kosi channel had shifted westwards by 3.2km on the Indo-Nepal border between 1844-1876 but this shift in the lower areas was as much as 6.4 to 9.6km. Around 1870, the Kosi started forming channels towards the west and around 1873 it adopted the Dhaus channel. (See 8 in Fig. 1.3)

The Dhaus Kosi: This channel of the Kosi passed through the Sursar Dhar, the Supahana Dhar, and the Dhaus Dhar. The river assumed this channel for twenty years, between 1873 to 1893. In the floods of 1873, Nathpur town, located on the northeast corner of Supaul was thoroughly devastated. The Kosi suddenly came on to the west of this town while it was flowing many a kilometers on the east of the town, till 1850. Inglis mentioned that, "In 1875 the town of Nathpur in the extreme northeast of Bhagalpur close to the boundary of Purnea was completely swept away…. In the interval of 25 years the river cut into and overspread some 20 miles of country turning fertile fields into arid wastes of sand, sweeping away factories, farms and villages and changing the whole face of the country from a fruitful landscape to a wilderness of sand and swamp."[8] Dhaus had shifted westwards and joined the Gogri and the combined stream flowed into the Ganga near Kursela. (See 9 in Fig. 1.3)

The Loran Kosi: Between 1893 and 1921, the Kosi used to flow through the Gorabe Dhar, the Loran Dhar, the Hareli Dhar and the Mircha Dhar and joined the Ganga near Kursela. This was probably the first time that the Kosi had taken a southwesterly turn upstream of Chatra in Nepal. In the upper reaches, the river had followed the course of the Thalana Dhar and the Haiya Dhar. According to Col. Haig, in 1891 the river took an easterly swing and it appeared that the town of Purnea would face the wrath of the river but the tragedy was averted. In 1897, the Kosi turned towards the west and the idea of railway line joining Anchra Ghat and Forbesgunj had to be dropped. (See 10 in Fig. 1.3)

The Dhusan Kosi: In 1922, the Kosi that had turned southwest below Chatra, continued further in the same direction and its main channel entered India at Bagia Ghat. This year the Kosi acquired the Bogla River, the Dahansan Dhar, the Chilauni Dhar, Bhenga Dhar and the Baluaha Dhar route before joining the Ganga near Kursela. Pratap Ganj town in Supaul district, which was located on the banks of the Kosi for a long time, was now 16km east of the river. (See 11 Fig. 1.3)

The Tilawe Kosi: The Kosi once again shifted towards the west below Chatra in 1926 and now passed through the Berda Dhar and the Tilawe Dhar. Kusaha Ghat and Bhim Nagar towns that were located 16km west of the river, were now located on the western bank of the Kosi. The town of Saharsa was now located on the west bank of the river and the Kosi had left Madhepura far behind in the east. (See 12 Fig. 1.3)

The Dhemura Dhar: In 1930, the Kosi adopted the Dhemura course for its flow. It also crossed the Saharsa-Supaul rail line. Bhaptiahi was located two kilometers west of the river. The devastating earthquake of Bihar followed in 1934 and that brought many changes in the courses of the rivers. Many new channels of the Kosi were formed but the main flow was confined to the Puraini Dhar or the Purain Dhar. This channel used to flow almost parallel to the Saharsa-Supaul road. It was around this time that the Supaul-Bhaptiahi rail line was devastated. (See 13 Fig.1.3)

The Soharain Kosi: In 1936, the river once again changed its path below Hanuman Nagar in Nepal. It now flowed through the Gonja river, the Bainti and the Soharain Dhar (See 14 Fig. 1.3). This course of the river adversely affected the Nirmali-Bhaptiahi rail line and a part of the rail line was washed away. This suited the British since the break in the rail link prevented freedom fighters from easily crossing the river and their movements were hampered. The government did not repair the rail bridge and allowed it to get washed away completely. The railway station of Reharia, between Nirmali and Bhaptiahi, is sunk under a sand bed these days. Rail traffic has been disrupted ever since. It was only on June 6, 2003 that Prime Minister Atal Bihari Vajpayee laid the foundation of a two kilometer long road-cum-rail bridge across the river. It is estimated to cost Rs.350 crores(cr) and is likely to be completed in nine years.

The Tilyuga: This river is also called the Triyuga and finds mention in the Mithila section of the Vishnu Purana. It is a river independent of the Kosi and has its origin in the Chure range of the Himalayas. It enters Bihar through Raj Biraj in Nepal and passes through the villages of Kunauli, Kamalpur, Dagmara, Sikarhatta, Dighia and Dudhaila, etc. Now it crosses the western Kosi embankment at 22.6km length, near Dagmara. Mahadeo Math, also known as Asurgarh, is a very important and historic village on the west bank of the river. Earlier the Tilyuga used to flow east of Nirmali, Rasuar, Dhabghat, Kadmaha, Sisauni, Barhara, Manohar Patti and Khokhnaha. Then it used to flow west of Parsa Madho and Siswa to join the Bainti Dhar of the Kosi River. After the Kosi embankment was constructed in 1955 the Tilyuga was forced to join the Kosi near Nirmali.

The main stream of the Kosi took a turn towards Hanuman Nagar in 1942 and till 1948 the Tilyuga was the main channel of the Kosi. After the construction of the Kosi embankments, a major portion of the Tilyuga flows within the Kosi embankments and the river is lost in several braided channels. The flow path of the Tilyuga is shown as 15 in Fig 1.3. The present day Kosi is marked as 16 in Fig.1.3. It has been following this course since 1948 as the river has been jacketed between two embankments since the late 1950s. We shall study more about this straitjacketing of the river in the later chapters.

1.3 The Kosi Floods

We have had a glimpse of what has been written about the Kosi in the scriptures. It is no less important in the folklore, folksongs and legends. "The Kosi is regarded as a virgin river in the folk tales. It is virgin because it is carefree, it does not bother about any bondages, it carves a new path for itself whenever it likes. If her behaviour affects somebody, she is not concerned about it. It has a lover who is as powerful as the Kosi. He is perfectly black in complexion and has a spade, which has got a blade of eighty maunds, and its handle weighs eighty-two maunds. His name is Rannu Sardar and the Kosi dances to his tunes. Rannu paves the way for the Kosi and the river follows him. Behind the two, follows a big tale of misery and devastation… On one side there are tales of miseries and devastation and on the other side there are prayers and pleas to the river. The women pray to the river as a mother, saying that enough is enough and please go back now. Hundreds of songs are written and sung on these themes. Promises are made to the river that if it spares the people and does not create situations that boats have to ply in the villages, they will offer platesful of sweets to her; but the Kosi is not concerned. It continues to devastate. And then denounciations and curses replace the pleas and prayers. Then the title of a 'mother' and the status of a 'goddess', too, are withdrawn. Then the Kosi remains only a naughty, virgin and unsteady girl. The only known way to bring such girls to terms is to get them married. As the legend goes, women, fed up with the vagaries of the river, put vermilion powder in the river to threaten it with marriage and it is said that the river runs away from the scene. This was done also to tease the river and avenge their hardships."[9]

Some people, however, do not treat the Kosi as a virgin river. They see the young Kosi as the wife of the old hermit Richeek. This marriage was not compatible and the frustrated Satyawati, who later became the Kosi, used to wander in the Himalayas. Neither Satyawati, nor its changed form the Kosi, remained stable through her life. Ever since Satyawati became the Kosi, it became unstable and could never remain in the same stream. The fact remains that the Kosi, whether it became unstable because of her childish behaviour or because of her frustrations in life, its vagaries played havoc with the people residing in the basin.

There is no doubt that in the process of the Kosi's westward displacement it shifted from the Parman in the east to the Tilyuga in the west, as records are available for this shift. If the river had at any time occupied the channels of the Kartua, the Teesta and the Mahananda, then its extent becomes much wider, from Mymensingh in Bangladesh to Darbhanga in Bihar. Even if this did not happen, it is certain that the districts of Purnea, Araria, Katihar, Saharsa, Madhepura, Supaul, Madhubani, Samastipur, Khagaria, Darbhanga and Bhagalpur (Naugachhia sub-division) have been badly mauled by the river in the past. It is not possible for one to describe the hardships suffered due to its vagaries, unless one has faced such miseries. It is not possible for others to narrate the stories of floods, erosion, sand casting and the resulting house collapses, loss of crops, starvation, unemployment, medical emergencies, indebtedness, extortion by money-lenders and migration that the people of the area have endured for long. 'The Kosi havoc was a constant terror and even when there were no floods the people did not have much joy in life. Mothers would threaten their babies by saying that Kosi *Mai* would come and carry them away. Lullaby songs used to frighten the children to sleep. Small children in households near the Kosi River used to be kept tethered lest a sudden flood wash them away. Born and brought up in such an atmosphere, seeing the parents at the edge of a mental and physical collapse all the time, a generation has grown up in this area with a peculiar mental complex."[10] It was also said that, "Hindus as a class are fatalists and the people of the

Aerial view of an engulfed village

Saharsa district are probably much more fatalistic because of the Kosi ravages. To them the world is *Maya* (illusion), otherwise how could Kosi *Maiya* (mother) be so unkind on her children with constant floods and ruin their households.'[11]

The Kosi has found some mention in documents from the Islamic period. The nature of the Kosi can be glimpsed from a story about the army of Sultan Feroze Shah Tughlaq returning to Delhi in 1354 after its expeditions from Bengal. It is reported that when the army of the Sultan reached the Kosi, it found that the troops of Haji Shamsuddin Iliyas were waiting to challenge them on the other side of the river. This Haji was the one who had established the cities of Hajipur and Samastipur. The soldiers of Feroze Shah found themselves in a fix, on the banks of the Kosi near Kursela. The current in the river was preventing them from advancing any further. Later it was decided to travel northwards along the river and cross it wherever favourable conditions were met. The Sultan's army traveled for about 100 *Kos* (nearly 250km) and crossed the river near Jiaran, close to the place where the river discharged into the plains. The stream of the river was of course narrow here but the current was so swift that boulders weighing 500 *maunds* were floating like leaves in the river. At the place where the Sultan decided to cross the river, he placed two rows of elephants across the flow hoping that the upper row would reduce the velocity of the flow. He then tied big ropes to the lower row of elephants so that if any soldier was washed away, he could be rescued with the help of these ropes. Haji Shamsuddin could never imagine that the Sultan's army would cross the river and when he got the news of the Sultan crossing the river with his army, he fled.[12]

The Kosi also finds a mention in Ain-e-Akbari. According to that document, it formed the boundary between the Suba-e-Tirhoot and the Suba-e-Bengal. Those days Sarkar Purnea was a part of Bengal and the *mahaals* of Purnea were located east of the Kosi. The *mahaals* located on the west of the Kosi belonged to Sarkar Munger. These divisions indicated that the Kosi was flowing west of Purnea those days but its lower channels were not very clearly defined. As a matter of fact, all the maps prepared before Rennel were based on conjectures and were not reliable. Towards the end of the nineteenth century, the Kosi used to flow past Purnea. O'Malley (1908) writes, "The Kosi is notorious

Water water everywhere...

even among the Bengal rivers for its vagaries and is remarkable for the rapidity of its stream, the dangerous and uncertain nature of its bed, and the desolation caused by its floods. Sweeping down through the hills, it brings with it volumes of sand, which it heaps over the surface of the country, destroying the productive power of the land, choking the wells, and driving the villagers from their homesteads. It takes, it is said, half a century before this sand is fit for cultivation. As an instance of the violence and the destructive power of the stream, it may be mentioned that in 1875 the town of Nathpur, in the extreme northeast of Bhagalpur (the present district of Supaul) close to the boundary of Purnea was completely swept away. Its site was left many miles east of the Kosi, whereas in 1850, it lay some miles west of it."[13]

Probably, these reasons made an English writer comment abusively about the Kosi. He said that, 'The Kosi is an impudent hussy who leaves her bed at night and seeks strange beds, and that is why no engineer will willingly have anything to do with her, for fear of his reputation."[14] We would not like to say anything about this remark except that it is a difference of culture. We see rivers as 'mothers' and the colonial rulers, just because they were here for plundering and some rivers like the Damodar and the Kosi interfered with their collection of revenue, called these rivers 'Sorrow of Bengal', 'Sorrow of Bihar' or a 'hussy'.

The floods of the Kosi had one more peculiarity. Since the river was changing its course regularly, the areas affected by the floods of the river had three distinct features. First were the areas, which formed the bed of the Kosi and were directly hit by its floods. These areas not only faced the direct onslaught of the floods but also had to face erosion of the land, sand casting, waterlogging, scarcity of drinking water, total collapse of health services, disruption of the road and communication systems, engulfing of villages, small-pox, cholera, kala-azar, snake bites, mass-scale deaths of livestock for want of fodder, etc. Even if one called

these problems nightmares, accidents or natural calamities, it was almost impossible to face the grim situation that befell the flood victims.

A piece of land where one could build a hut for the family was an immediate necessity after the floods were over. One's own land was usually consumed by the river or, if one was lucky enough, lay submerged under water. To arrange for two meals a day for the family and arrange for inputs for farming on any left over piece of land was no less a heroic a job. Rent had to be paid whether there was a harvest or not. The entire situation favoured the landlords and the moneylenders who could grab the remaining lands of the flood victims by advancing loans. It was really impossible to recover the land from the clutches of the landlords. Thousands of acres of land in the Kosi basin changed hands under these circumstances. There was a movement in Saharsa in 1944, led by Rajendra Mishra, against Darbhanga Raj, when he managed to restore 1600 to 2000 hectares of land, the mutation of which was not complete, to the original owners. But that was all.

Those areas from where the Kosi had already passed were no better either. The only consolation was that, instead of the main stream of the Kosi, many small rivers used to flow in this region. Sediments filled the ditches and leveled the land but shrubs of *Jhaua/Kas* and *Pater* would replace the crops on the fields. Agriculture was possible only after the bushes were cleared. This was time-consuming. It usually took between eight to ten years to get back to normal life.

In the areas that the Kosi was about to invade, some small streams would become active. The spills from these streams would carry fine suspended silt and spread it over a large area. This would result in a bumper crop in the rabi and kharif seasons. But all this was an illusion as the main stream of the Kosi would hit the area soon after and destroy whatever came its way. It is worth noting that from 1923 to 1946, some 510,000 persons lost their lives to malaria; 210,000 deaths were caused by kala-azar, 60,000 succumbed to cholera and 3,000 yielded to small-pox in the Kosi basin, a total of 783,000 deaths.[15]

There is a long list of learned people, thinkers, administrators, engineers and social workers who tried to highlight the problems faced by the people in the Kosi basin. Some of these persons, who worked untiringly over the problem during the nineteenth and the early 20th century, were Buchanan Hamilton, W.W. Hunter, Montgomery Martin, L.S.S.O' Malley, William A. Inglis, F.C. Hirst, J.Inglis, F.A. Shillingford and Ferguson, among others. When the Kosi entered Bhagalpur district (now Saharsa, Supaul, Madhepura and Navgachhia sub-division of Bhagalpur) in the lower reaches in the early twentieth century, many eminent persons like Gulab Lal Das, Bhupendra Narayan Mandal, Laliteshwar Mullick, Brajeshwar Mullick, Swami Sahajanand Saraswati, Harinath Mishra, Sua Lal Sinha and Rajendra Mishra, etc. did their bit relentlessly to bring the Kosi issue to the fore.

In 1953 the Government of India gave formal approval to the Kosi Project which led to the construction of 125km long embankments on the eastern bank of the Kosi, from Birpur to Kopadia and 126km long, from Bhardah in Nepal to Ghonghepur in Saharsa, on the western bank. This work was almost completed by 1959. The embankments were supposed to protect 214,000ha of land from the recurring floods of the Kosi. A barrage across the river was also constructed near Birpur in 1963 to facilitate irrigation of 712,000ha, through the Eastern Kosi Main Canal. Another canal, called the Western Kosi Canal, the foundation stone of which was laid in 1957, is also being constructed to irrigate some 325,000ha of crop land on the western side of the barrage. The work on this canal is still in progress. We shall discuss these projects in the subsequent chapters. In the next chapter we will study the debate that ensued over the taming of rivers after the British occupation of the country and the steps taken to control the vagaries of the Kosi in the period following independence.

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2
A History of Flood Control

2.1 Coping with Floods

Thousands of years ago human beings lived in caves inside forests. Hunting was their main occupation. They would roam in quest of food. Later they domesticated animals which met their food requirements to an extent. The hides of the animals helped cover their bodies. They learnt farming some 9,000 years ago. This compelled them to shed their nomadic way of life and settle down. Contrary to common belief, farming started on hill slopes as it rained enough there to meet the crops' water requirements. Gradually, perennial sources of water were felt as a prime need for farming and people moved closer to rivers. This encouraged agricultural operations in the plains. Hindu scriptures define agricultural lands in terms of *Dev Matrika* – rainfed lands and *Nadi Matrika* — lands irrigated by rivers. Abundance of fish must have been an added attraction for settling along the rivers.

Farming along the rivers was also vulnerable to floods. While normal floods helped the crops, the abnormal ones harmed them. This led to a search for non-monsoon crops. These crops yielded a good harvest as the river would revitalize the land by spreading fresh silt every year during the rainy season and the moisture content of the soil would be enough to meet their water requirements. Thus in the years of abnormal flooding any damage to the monsoon crops would be compensated by a rich harvest of winter crops. People still lived on hills or elevated lands around.

Growing population and the fervor of some adventurous people must have induced them at large to settle permanently near rivers. These enthusiasts must have been aware of the dangers of flooding, but the hopes of good harvests and a relatively easier life in the plains may have prevented them from going back to the hills. It was not a bad bargain.

Irrespective of the population growth, the resources of land, water and forests were so vast that more and more people were needed to tap them. Perhaps, this was the time when elderly people began to bless their progeny to become fathers and mothers of a hundred children.

Iron was discovered some 3,500 years ago, which helped people to create improved tools for farming, arms for defence and implements for hunting. The discovery of iron and blessings to breed a hundred children laid the foundation for denuding the forests as 'these hundred children' distinctly visualized the benefits of more and more land being available for agriculture. A sizable amount of land was reclaimed by burning the forests.

Reckless denudation of the forests cleared waterways for the surface run-off and it took less time to reach the streams. The grip of trees and plants on the adjoining soil weakened, making erosion easier. Subsequent deposition of the eroded soil in the riverbeds made them shallower, reducing their discharge carrying capacity. The rivers started spilling over their banks more frequently and floods became a common feature.

When a large river spills its banks during the rainy season the silt spreads over a large area along with the river water and adds to the fertility of the soil. But the floodwaters also inconvenience the people and disrupt normal life. The impact of such floods on the plains' people may have ranged from minor inconveniences to devastation. Floods thus posed a difficult dilemma. Farmers wanted the silt and moisture over their lands and hence welcomed floods. At the same time they did not want the troubles caused by the floodwaters. The rising frequency and severity of floods increased their duration year after year and started dislocating normal life. The people, however, had forgotten that it was they who had occupied the flood plains of the rivers and not vice versa. It was they who denuded the forests and tried to dislodge the rivers from their legitimate territory. The fault thus lay with the people and not with the rivers.

The easiest way to deal with this water was to construct a wall between the water and the flooded areas. People must have resorted to throwing protective rings around their houses and saved themselves from the gushing water. But protective walls around

individual houses only aggravated the problems for their neighbors who now had to deal with more water and were forced to strengthen and increase the width of the rings around their houses. This ever-escalating process must have forced them to sit together and think of a collective effort to face the flood problem. They must have demolished the individual walls and might have thrown a ring bund around their village. Having done this they would have solved their problem but may have increased the difficulties of the neighboring villages who would now have to tackle more floodwaters. Thus to resolve an individual flood problem people would have had to negotiate with their neighbors and neighboring villages.

The oldest way to deal with floods was to build the huts on high ground and to construct boats onto which the dwellers moved with a few household goods whenever the floodwaters entered their dwellings. Another method was to build a mound of earth or erect a platform above the floodwaters on which the house was located. As the population grew, "It was a natural development from the mound of earth on which the dwelling was placed to a ridge of earth surrounding the area that was being cultivated, and so long as the area of land which was being tilled was a small percentage of the valley, levees could be constructed cheaply by the property owner, which would protect his crops from ordinary floods. If he was energetic and far-sighted, he ensured his property from even the occasional overflows, which overwhelmed the remainder of the valley, by building his levee a little higher than his neighbor."[1] Such developments occurred in the USA a few centuries ago when immigrants first established their settlements.

British engineers had observed the same thing in Orissa. "They must have originated from inundations and in the fears and cupidity of individuals; thus A threw up a bund to prevent floods reaching his lands, and by so doing forced the water to over a part of B's estate. B on this threw up a bund to protect his crops from A's bunds and forced the waters to find a passage below, which they affected on C's *talooks*, who also in turn threw up a bund and then it would appear that bund after bund had arisen and been strengthened and elongated."[2]

Breaches must have occurred in these bunds compelling the victims to approach their chief or the ruler with a request that the state do something to protect them against the menace of floods. And the chief or the ruler, in consultation with the nobles must have entrusted some among them to study the problem and suggest a remedy. These persons were the forerunners of the hydrologists or the river engineers of today. In order to act on their recommendations the ruler may have appointed a person to arrange the requisite resources for the purpose. The person entrusted with the responsibility of taking instructions from the nobles and working to 'their entire satisfaction' was surely the forerunner of the present day contractor.

Given the formidable nature of the problem, the early river engineers may have got the authority and access to the state resources to act on their discretion. Going beyond an individual, a family or a village, they may have taken a larger view of the problem and focused on the river itself. The development of settlements in the Mississippi basin in the USA, after its colonization, stands testimony to this hypothesis. The space between the rings constructed by individuals and villages was so little that the water passing through the gaps would acquire tremendous velocity and cause more damage. The state was forced to fill these gaps and this resulted in continuous embankments. This continuity of the bunds was surely unintended.

2.2 Embankments Invite Trouble

According to a legend, once there was a daredevil who tried to contain the Kosi. It is said that a demon got attracted by Kosi's beauty, fell in love with her and proposed to marry her. Kosi put a condition that if he could contain her between the Himalayas and her confluence with the Ganga in a night's time, she would accept the proposal and if this did not happen the demon would be killed. The demon agreed and set to work. As the work progressed, Kosi got nervous seeing the pace of the demon's work. She went running to Lord Shiva, her father, and sought his help. Lord Shiva went to the place where the demon was at work, disguised as a cock and started crowing. The demon, though he had completed most of his work got nervous on hearing the cock crow thinking that it was going to be morning soon, left his job and ran away to save his life. The Kosi thus remained free.

King Lakshmana II embanked the Kosi in the 12th century AD and that earned him the title of 'Bir', the brave, from his subjects. This embankment was called the Bir Bund. Its remains are seen near Bhim Nagar, in Supaul district of Bihar, close to the fifth kilometer of the eastern Kosi embankment. Francis Buchanan regarded this embankment, that ran 32km along the western bank of the Daus up to its junction with the Tiljuga, as a fortification.[3] Hunter did not subscribe to Buchanan's view that it was a fortification and maintained that, "…by far the greater part of the natives attribute its formation to a different cause. They differ, however, considerably in their account. It is widely believed that this embankment was constructed to prevent the westward movement of the Kosi and its construction was stopped abruptly."[4]

It is quite likely, however, that Bir bund did not provide relief on the western side either, as explained by Shillingford in 1895, "This extensive embankment cuts the sources of the Dimra and the Tiljuga rivers from the Kosi and intercepts all floodwaters of the latter river from entering the channel." [5]

A major attempt to tame the rivers and control floods was made in 1756 when Dhausi Ram, an assistant to the Governor Mohammad Quasim Khan completed an embankment along the Gandak. This 158km long embankment was constructed at a cost of one lakh rupees. Immediately after its construction the rule of the country slipped into the hands of the British through the East India Company.[6]

As the East India Company tightened its grip over India, it started looking for newer sources of revenue and got its new colony surveyed. In 1788 James Rennel, the surveyor for northern India, observed many flood protection works, "These dykes are kept up at an enormous expense; and yet do not always succeed, for want of tenacity in the soil of which they are composed. It is calculated that the length of these dykes collecting amounts to more than 1000 English miles. Some of them, at the base, are equal to the thickness of an ordinary rampart."[7] Such dykes raise the bed level because of increased sedimentation and increase the flood levels as described further by Rennel, "One particular branch of the Ganges (navigable only during the rainy season, but then equal to the Thames at the Chelsea) is conducted between two of these dykes, for about 70 miles; and when full, the passengers in the boats, look down on the adjacent country, as from an eminence."

The embankments along the Gandak in Bihar kept the British on their toes although they could not give them much attention in the early part of their rule. Probably for the first time, in 1797 they spent about Rs. 36,000 on the maintenance of these embankments and recovered the entire amount from the local *zamindars*. The British did not categorize such works as public works and maintained that this was the job of the local *zamindar*.[8] If the landlords were unwilling, the collector was authorized to construct such embankments and recover the expenditure from the concerned *zamindar*. The administration appeared generally happy with the performance of the embankments and in a letter dated February 10, 1803 J. Rattray, Collector of Tirhoot, wrote to the acting president and the members of the Board of Revenue that because of the embankments "..the land, which would have been lying waste, were having luxuriant growth of crops."[9] The ryots and the *zamindars* were equally happy with the embankments. The Gandak changed its course in 1815 and a saltpeter factory at Singhia, near Hajipur was threatened. The Collector then had to recommend the appointment of a superintendent to look after the embankment. Between 1820 and 1825 it had fallen to such a ruinous state that the *zamindars* petitioned the government for repairs or to allow them to do so. Eventually it was decided to reconstruct the embankment under professional supervision and this was done in 1830.[10]

Elsewhere, as in Orissa, villagers living close to rivers built mounds of earth where they could take shelter during an emergency. These earthen mounds could also reduce the velocity of gushing waters. If the villages were close together, the mounds were also very close. Their basic philosophy of dealing with floodwater was that it should spread over as large an area as possible and rejuvenate the lands. Spreading of water over a large area also meant that the floods would be moderated and the water level would be within manageable limits. An indigenous variety of paddy seeds was available which could withstand different depths of inundation and it was only on rare occasions that the crops were completely lost. As the floodwater and the silt contained in it used to spread over a large area, a bumper winter crop was assured. Food grains were never scarce as the farmers used to choose the right kind of crops.

Floods became an issue in India after the British occupation of the country, as they had probably not handled rivers of the size they were confronted with. Nor had they seen so much seasonal water. It took them a lot of time to understand such floods and devise means to combat them. They first mistook the raised mounds as breached embankments along the river and tried to plug them to give them a continuous shape, thus unintentionally building embankments. Later they tried to strengthen and repair the embankments. They built new embankments also. But maintaining them became difficult, as they began to breach. A stage came when they were compelled to reconsider whether embankments were at all good for the society.[11] There were sharp differences of opinion between the revenue and the military officers of the British administration. Revenue officers wanted the embankments to be kept in a very good state while the military officers were not in a position to guarantee the same and more so when it had to be done at a very low cost.[12]

By 1820 embankment committees had been constituted in Orissa and their basic function was to prepare annual estimates for repair works and sanction them. Rules were framed for the construction and repair of the embankments and soon a technical bureaucracy came up in the form of superintendents, *pool bundee darogas* and their assistants, with their duties very clearly defined. Should a breach occur in any of the embankments, the "Superintendents will forthwith proceed to spot without waiting or requiring any orders from the Commissioner or Collector for that

purpose and shall adopt every practical means of which circumstances may admit of repairing the breach or of preventing further injury to the country."[13] The superintendents were held responsible for the failure of any embankments within their respective divisions; if any *pool bundee daroga* neglected to report to the superintendent the failure of any embankment within 24 hours of the occurrence, he was liable to be removed from his employment on a representation of the superintendent.

Thus, during the early part of the British rule the utility of embankments was recognized but slowly problems started surfacing. The Gandak embankments in Bihar were smashed to smithereens by the floods of 1872 leading to the inundation of 30 villages.[14] These embankments used to obstruct the return flow of the floodwater to the river, leading to massive waterlogging. This would make the flooded area unhealthy and diseases like malaria would spread. Since most of the rivers in the area had braided channels, the embankments would cut the source of supply of many channels. This would turn rivers into lakes and many such lakes were created subsequent to the construction of the embankments. Besides, though the embankments prevented the river water from flowing into the countryside, the land was deprived of the nutrient silt that would flow along with the floodwaters. These distortions in the land and water management of the Gandak basin in fact became the basis for a huge irrigation project in the basin in the 1860s. The simple reason was that because of the embankments, flooding of the countryside was prevented and artificial irrigation became a necessity.

The Damodar Experience

The early officers of the East India Company were basically sailors and traders. They were not aware of the intricacies of irrigation or flood control in India. Small, low height embankments for flood control were built along the rivers by *zamindars*. They could only prevent small floods and early inundation of the lower areas. If the floodwater rose to levels that threatened the embankments the villagers would simultaneously cut them at several places to lead the floodwater along with the fertilizing silt to their fields. Thus the requirements of irrigation and fertilizers were automatically met.

William Wilcox recorded very interesting observations of the irrigation practices in the Damodar basin of West Bengal. According to him, with the onset of the monsoons the sowing and transplantation of paddy used to take place much before the impact of floods was felt. As the rains advanced the water would accumulate in the area and soon a sheet of water would spread all over. Apart from being useful for sowing and transplantation, this water was a breeding place for mosquitoes. It was just then that the muddy waters of the river would gush into the area either by overtopping the riverbanks or through the cuts affected in the low height embankments along the river. This muddy water used to contain eggs of carps, inferior fishes and shrimps that would float into the paddy fields. The eggs would grow into carnivorous fish that fed on the larvae of the mosquitoes. Wide channels and berms of the fields used to guide the fish to flow along the slopes and wherever the water went the fish would follow. These were the places where the larvae of mosquitoes used to rest and it was hard for them to escape from the attacks of the fishes. To tackle prolonged dry spells, the local people dug numerous ponds and tanks, which acted as insurance against droughts, where the fish took refuge. Since the river was made to pass through the cuts in the banks at 40 to 50 places there was little danger of any floods taking place and there was no great risk. Wilcox wrote, "No villager could have given such a sound engineering opinion unless they had heard their fathers talk of such things, or had themselves seen the banks being cut. It explains the 40 to 50 breaches made in a single year in the Damodar river banks."[15]

The British, instead of strengthening and improving up on the system, mistook the shallow wide channels as abandoned navigation channels and the bunds along the river solely as a flood protection device. They ignored the channels calling them 'dead rivers' and started strengthening the *zamindari* bunds as flood protection measures. The people, however, used to cut these embankments for irrigation and the government slowly became firm about putting an end to this 'discreditable occurring', which it thought was the work of uncontrolled floods of the river. It never occurred to them that the breaches were secretly caused by the peasantry and that 40 to 50 breaches in a heavily embanked river of considerable length in a single year could not possibly have been made by the river itself, for one or two breaches eased the situation.[16]

2.3 Rail and Road Networks Expand but Floods Worsen

At the time when the British were grappling with the problems of the Damodar River, two monumental events took place in the 1850s. The first was the start of rail services between Thane and Mumbai on April 16, 1853 and the other was a revolt against the colonial rulers in 1857. It did not take much time for the rail services to come to eastern India. Bengal was at the helm of activities for the British and the first rail service in this zone was started on August 15, 1854 connecting

Burdwan to Howrah. It was later extended to Ranigunj. The government assumed the responsibility of the Damodar embankments in 1855 to prevent wholesale breaches in them. It had become necessary, in view of the extension of the railway line, to protect the railway embankment from the floodwaters of the Damodar. The flood control picture was getting 'brighter' with the construction of the watertight embankments on the Damodar, extra strengthening of the railway embankment adjacent to it followed by further raising and strengthening of the Grand Trunk Road. As if that was not enough, two more embankments in the name of Eden Canal were put in the same area and one had five embankments placed parallel to each other and the drainage line was thoroughly throttled. Wilcox described these embankments as, "five satanic chains binding the Damodar and dooming the once healthy and prosperous tract between it and the Hooghly to malaria and comparative poverty."[17]

Wherever the embankments were built, tanks and ponds located in countryside started dying as aquatic weeds jammed them. The fertility of the land was lost and scarcity and famines started raising their ugly heads.

The railway embankment had an insufficient waterway and it thoroughly impeded the drainage of the area after its completion in 1860. For the first time the government opened charitable dispensaries to combat malaria in Burdwan in 1861. In 1859 the government was forced to demolish the right embankment of the Damodar without making it a prestige issue, for a length of about 32km, to reduce the flood level attained after the construction of the embankments. This demolition yielded favorable results and the fertility of the soil of the inundated area greatly improved by 1863.[18]

Improvement in Transportation : A Pressing Need of the Colonial Rulers

Apart from furthering commerce and trade, the extension of railways and roadways became essential for the colonial rulers in the backdrop of the freedom struggle of 1857. They needed a strong network of roads and railways to send their troops to quell any rebellion anywhere at a very short notice, as explained in the Purnea Gazetteer, "The impact of the insurrections of 1857 was seen in a tightening up of the administration. It was appreciated that there should be more police *thanas* and an expansion of the administrative machinery to stop such insurrections. Roadways were also improved as the Ganges-Darjeeling Roadways was found to be extremely useful for military movements."[19]

Besides the strategic importance of roads for military movement and maintaining law and order, they also had to be developed for the exploitation of economic resources. Indigo planters played a great role in the economy of the district and their *kothis* were scattered all over the district. They used to have frequent social meets. Their *kothis* were therefore interconnected by roads on which traps drawn by a single horse or two-horse carriages or *palkis* could move easily. Besides social meets the produce of the land, particularly indigo, had to be taken to secondary markets. From there most of it went to Karhagola or Manihari Ghat from where it was transported by boats.

Initially the investment on railways by the British was not profitable but this means of transportation was very popular in Britain. The traders there wanted to sell their goods in the interiors of India. The government was also committed to promote the rail companies and guarantee interest on their investment. The East India Company and the Crown was subjected to continuous Parliamentary pressure to extend and multiply railway lines in India even at a loss to the revenues of the country.[20]

Actually two pressure groups were working in Britain that were not very enthusiastic about the expansion of railways here. The first group was led by Sir Arthur Cotton who had done exemplary work on irrigation in the Cauvery and Godavari basins in south India. He was a staunch advocate of navigation canals. He maintained that, "…what India wants is water carriage; that the railways have completely failed; they cannot carry at the price required; they cannot carry the quantities; and they cost the country three millions a year, and increasing, to support them. That steamboat canals would not have cost more than one eighth of the railways; would carry any quantity at nominal prices and at any speed; would require no support from the treasury; and would be combined with irrigation."[21] Sir George Campbell who became a Member of Parliament after retiring from Bengal, had once commented on Sir Arthur Cotton saying, "there was some truth in the saying regarding him, that he had water on his brain."[22]

The other faction opposed to railways was of the opinion that expansion of railways in India would become a permanent liability on the government and would have to be very heavily subsidized. This faction doubted very much whether people would use the rail services at all instead of bullock carts. They doubted that *sadhus*, beggars, labourers and the like who did not have a pie to spare would ever spare money on rail travel. They did not know the worth of time. Despite all these discussions, the expansion of railways continued as that, probably, was the need of the hour.[23]

Communications Improve But the Floods Become Devastating

Let us look at Bihar's land profile. Most of the Gangetic belt is a plain. All the roads, canals, or railway lines are constructed by filling in. Obviously, they obstruct the natural drainage and impede the flow of surface water. To cite an example, take the case of Champaran district. In 1794, there was only one road connecting Sarkar Saran to Sarkar Champaran and was in such a bad condition that people were forced to wade through water. The Collector of Champaran had commented in 1800 that there did not seem to be any road there and recommended that some 280km of roads be constructed to meet the requirements of trade, etc. By 1845, the district headquarters of Champaran, Motihari, was connected to Muzaffarpur, Patna, Bettiah and Sugauli. The town was also connected to Nepal via Ramnagar, Tribeni and Bettiah. In 1876 the road length in Champaran rose to 700km. The extension of roads continued to 1600km (1886), 1666km (1899), 2091km (1906) and to 3770km in 1938.[24] Construction of roads improved communication for sure but the drainage of the country was adversely affected. Tribeni canal was constructed in Champaran, following the famine of 1896. It was aligned in a west to east direction but the slope of the land was from north to south. This canal acted as a bund to the flow of rain water and the engineers responsible for the repairs and maintenance of this canal could never live in peace. Such incidents happened at many places in north Bihar. Rail services started in Bihar on November 1, 1875 when the first train traveled between Samastipur and Dalsingsarai. Train service was introduced in Champaran in 1888 and when the British left the country, there were 317km of railway lines in Champaran.

It was necessary to improve the surface communication but this was done recklessly, without any regard to the drainage of the country. That landed the British in a tight spot. The *zamindars* were busy making new embankments along the rivers apart from maintaining those that existed. The rivers were not able to hold their waters as they were getting narrower. Their bed was rising because of sedimentation, the land was losing its fertility because it was not getting silt from the rivers, there was acute waterlogging outside the embankments along the rivers. Malaria and other dreaded diseases were rampant. To cap it all, the rivers within the embankments were breaching, leading to massive loss of life and property. Soon the care of the embankments became one of the most difficult duties of this harassed department, as it was seldom able to prevent surreptitious cuts, benefiting small crop areas to the of ruin of much greater.[25] The resulting condition was responsible for the abandonment of the Damodar Project and the inference "…the scheme for irrigation from the Ganduck in north Bihar induced the Lieutenant Governor 'to let that project to rest'."[26]

The railways, however, continued their expansion and were held responsible, probably for the first time, for causing floods injurious to the interest of the people, by blocking the flow at Banswar Chak Bridge in Saran district in 1895. It had to pay the farmers a compensation of Rs. 60,000 to make up the losses.[27]

When the Kursela bridge connecting Barauni to Katihar, along the northern bank of the Ganga over the Kosi, came up for construction, the Superintending Engineer, Northern Circle, H.N.C. Clöette wrote a letter cautioning the Commissioner of Bhagalpur and Santhal Parganas, about the possible danger of extra flooding in his area north of the Ganga and that the railways should be asked to compensate in the case of such an eventuality. He said, "..but by making continuous high embankment across this country without free drainage of every depression, the natural flow of the floods will not only be much retarded, but every basin which is crossed by the embankment will be filled with water up to the level of the highest contour of its watershed, and will remain so filled till it dries up slowly by absorption or percolation. This is a state of things to guard against which Government have issued imperative orders but we are here threatened with its result to a very aggravated extent."[28]

Clöette's missive yielded results and the Commissioner of Bhagalpur wrote a very strong letter (No: 133R dated April 11, 1897) to the Secretary, Government of Bengal, Department of Revenue, saying, "The railway authority keeps us in the dark and appears to avoid us and we suspect them of intentions that can only be called sinister and the proceedings of the company in London which I have seen support this view; that is, they are careless of every consideration but the financial results of the promoters".[29] In fact, this railway embankment and the deficient waterway bridge at Kursela was objected to by the Collector of Purnea and owners of the Gondwara factory in Purnea. The railways wanted to hush up the matter by providing some extra waterway in the bridges on the Barandi, the Boro and the Chhota Kusi and by paying compensation in case there were property damages to the north of the Ganga. This hush-hush agreement was ultimately signed on January 28,1898, but the matter was leaked to the Commissioner of Bhagalpur who took strong exception for not including the administration of Bhagalpur and Munger. He succeeded in forcing a stricture on the railways for a separate agreement with the administration of Bhagalpur.[30] This agreement was signed on December 5, 1898 on the same pattern as in Purnea[31] but the railways succeeded

in keeping the Munger administration at bay and proceeded with the construction of the railway line. When considerable damage was done in Munger by the floods of 1904 and most of it attributed to the railway embankment running parallel to and north of the Ganga, the aggrieved parties looked to the railways for compensation but the effort ended in vain.

Development of roads and railways is a never-ending process. By extending this infrastructure the British had prepared themselves to quell any rebellion, enforce law and order, ensure trading and also have social outings and fun. They acquired a thorough grip and total command over the administration but not without creating a fresh problem for themselves. Capt F.C. Hirst wrote about the rail line linking Barauni to Katihar after its construction. This rail line was like an embankment along the northern bank of the Ganga obstructing the flow of all the tributaries of the river from the north which meant that the bed level of the Ganga would rise slowly and that would lead to an imbalance between the Ganga and its tributaries joining from the north. That meant a rise in the fury of floods north of the Ganga. Thus while communication was improving the flood scene began to worsen.[32]

2.4 The Kosi Embankments Debate

With the eventual rise in floods, the enthusiasm of the British for controlling floods in the Gangetic basin started subsiding slowly. They no more saw the 'luxuriant growth of crops' and 'the protected property' and they had started drifting away from such constructions. There were serious floods in the Kosi basin in 1869 and 1870 and Purnea was badly hit by the spills of the Kosi and the Ganga resulting in considerable damage to the crops and cattle but that was reported to be almost an annual phenomenon. Hunter wrote, "A project for embanking the Kusi, which would affect the reclamation of a vast area of jungle country, has been proposed but it is very doubtful whether it could be accomplished. The collector of Purnea maintained that bumper crops harvested in the rabi season on the uplands compensated for the kharif losses during the flood years. This was very common and at least in the *thanas* of Manihari, Dhamdaha and Gondwara, this happened for sure."[33] This was probably the first indication of any proposal to construct embankments on the Kosi although the idea was dropped. It, however, aroused the expectations of the public for flood protection. The British were incapable of doing anything on their own as a considerable length of the river (about 40km) was located in Nepal and its clearance was essential if the river was to be tampered with.

Differences between the two governments were a stumbling block in the efforts to tame the Kosi. Tension used to prevail over the boundary disputes between the jungle areas of Nepal and the plains of India. This tension was more pronounced where the boundary was a river as these rivers used to meander and thereby distort the boundaries. Relations between the two countries improved towards the end of the nineteenth century leading to the signing of the Sugauli Pact. Immediately after signing this famous pact, the British tried to tame the Kosi by constructing embankments along its course, in 1891. There was a long correspondence between the Government of India and the Nepal Government over the issue and permission was sought from Nepal for constructing an embankment along the Kosi at an estimated cost of Rs. 15,000/-. The Prime Minister of Nepal had agreed to this proposal as the bund would protect a length of 46km in Nepal from the ravages of the Kosi. Unfortunately, there were heavy rains in the third week of May 1891 which made the construction of the bund impossible.[34]

In 1893 it was apprehended in some quarters that the Kosi would abruptly change its course and flow into some of its old channels in the east. It was also apprehended that such a change would occur in the *terai* area of Nepal. The same year W.A.Inglis, Chief Engineer of Bengal province, toured the Kosi area and went deep into Nepal to understand the means of taming the river. He rejected the possibility of an abrupt turning of the Kosi toward the east and refrained from suggesting any interference with the natural flow of the river. He opined that the river be left to its own devices. The government accepted these recommendations.

Shillingford (1895) thought that the Kosi swung like a pendulum between its eastern and western boundaries and was then tending to move westward. He wrote, "The Kosi after reaching its westernmost limit, will go back to its easternmost abandoned channels and then begin the work of moving westwards all over again."[35] Charles Elliot(1895) did not agree with Shillingford and wrote, "There seems to be no evidence adduced to show that the river has reached its westernmost position, or to show that if it has, it will return violently from a direct western to an extreme eastern course, instead of doing so gradually."[36] Elliot wanted people to exercise restraint while talking about the Kosi as he was of the opinion that the only certain theory about the Kosi was that its behaviour was most uncertain. He believed that should there be any proposal by experts to tame the river, the government would surely consider it, saying that "It is hardly necessary to say that, as in all similar cases, the objects of the promoters of the embankment schemes are so good that it is impossible not to sympathize with them. The advantages resulting from the embankments are

immediate and obvious. But there is scarcely a case, in Bengal at least, where it has not happened that in the course of years the difficulties and not frequently dangers caused by embankments have become so great that their removal has become a question of discussion. In case of Damoodah and Goomti rivers this step became a pressing necessity and has been carried out."[37]

The Calcutta Flood Conference, 1897

A meeting of the senior officers of the secretariat of the Government of India was held on February 24, 1897 in Calcutta to discuss the damages due to floods in the Kosi basin in the previous two years and suggest means to tackle them. Proposals for embankments on the Kosi were also discussed based on the information gathered by the local authorities, railway officials and the indigo planters. "The result was that the scheme proposed was pronounced to be of doubtful efficacy, while its cost was enormous. It was concluded that no steps are feasible for controlling the course of this tremendous river with its numerous channels and their wide and elevated beds, beyond protecting by short lengths of embankments isolated tracts exposed to floods."[38]

It appears that Nepal was contacted in this regard and the then Prime Minister of Nepal, Bir Shamsher Jung, had communicated to the British Government that it had no objection to the works being taken up near Chatra. The Nepalese surely did not want submergence of any area in Nepal and wanted to prevent any damage to the temple at Barahkshetra in Saptari district. A letter written by Col. Wylee (March 6, 1897), Resident in Nepal, assured the Government of India that the Nepal Government would extend all possible help in this matter. From the letter of the Resident, it appears, that the same scheme was being discussed for two years but for reasons unknown the work was kept in abeyance.[39]

Since it was suggested in the Calcutta Flood Conference that short lengths of embankments could be built to protect isolated tracts exposed to floods, many embankments sprang up all over north Bihar and were constructed mainly by the local authorities or the indigo planters. Later records show that the river continued to shift its course, never allowing the promoters to live in peace.[40]

2.5 The Ghaghra Controversy

While the Kosi occupied the prime space in the field of flood control, the frequent failures of the Gandak embankments had made engineers defensive and were holding them back from advocating the cause of embankments. There was a severe flood in the Ghaghra in Saran district of Bihar in 1890 and the people there demanded embankment on the river to save them from any future onslaughts. The government instead of taking any steps immediately, appointed a Superintending Engineer, Buckley, to review the proposal and his findings were further looked into by another senior engineer, Odling. The Lieutenant Governor, upon the recommendations of these two engineers, refused to permit any construction of embankments along the river.

The engineering community applauded the Lt. Governor's remark that, "His Honour does not see his way to undertaking through Government Agency such a work, but leaves it open to the land owners to work themselves at their own costs," saying, "We are glad that such an important question has been thoroughly investigated with every intention of affording such relief as might have been found feasible, and we are further glad that the question having been thoroughly gone into. Sir Charles Elliot has accepted the findings of his responsible professional advisors, and has declined to commit his government to a measure which, at best, is of doubtful utility, but of very much less doubtful risk, and yet has left the sufferers to obtain such relief as they have a prescriptive right to, themselves, at their own costs."[41]

There was a breach in the Tirhoot and Champaran embankments on the Gandak in 1894 and a sluice gate was later constructed at a cost of Rs. 12,500. Earlier the floodwater used to find its way to the natural low level drainage channel of the Baya Nala but the sluice gate was likely to impede the free flow of water. The engineers apprehended that the free flowing *nala* would now get converted to an unhealthy bed of malaria. Referring to the turning down of the proposal to embank the Ghaghra the last previous year, a question was raised, "Have the responsible advisors of the Government not yet come to understand the distinct functions performed by these two classes of channels? Is it for the irresponsible outsiders (to) study how nature works, and to point out to them that rash interference with great natural laws are certain to be avenged one way or the other."[42]

2.6 Impact of Deforestation becomes Evident

As stated earlier, the British had extensively surveyed eastern India. A very important component of such surveys was done by Francis Buchanan Hamilton during 1807-1816. The East India Company believed that while touring east India Buchanan Hamilton had collected 'extremely valuable' information for it, which was highly advantageous to their servants in India, specially those occupied in collection of revenue.[43] Whenever Buchanan, looked at the rivers in Bihar, he

had his eyes firmly fixed on the navigational capabilities of these channels, whether they were perennial or seasonal, on the sizes of the boats that could ply on those rivers and the weight that these boats could carry, whether timber could be floated down them and if that be so, what were the places where timber was likely to get stuck, and so on. By the turn of the nineteenth century, the British had cleared the forests of north Bihar and the plunder of its forest wealth was nearly complete. In 1907 O'Malley wrote, "Thirty years ago, the country between Patthardeva on the frontier and the jungle belt was well wooded. It is now a cultivated plain, which offers no resistance to the passage of floods."[44]

Now, these forests are fully denuded. After India attained its freedom, the government was compelled to open a North Bihar Afforestation Division at Muzaffarpur, in 1954, for the restoration of forests in North Bihar. A division to look after afforestation in Purnea was opened in 1958.[45]

2.7 The Flood Debate goes Public

Before we get into the flood debate, it is essential to recall that when a heavily silt laden river is embanked, the sediment gets trapped within the embankments, lifting the bed level successively upwards and necessitating the raising of the embankments. There is a practical limit to which the embankments can be raised and maintained. The river water seeps through these embankments and causes water logging in the countryside. The countryside is deprived of the nutritious silt that it would have got if the river was allowed to flow freely. The embankments prevent the flow of the tributaries from getting into the main river and sluice gates have to be constructed to allow the tributary water to flow into the main river. These sluice gates cannot be opened during the rainy season because there is a possibility of the main river water entering the tributary and flooding newer areas hitherto free from flooding. The tributaries, on their own, may start flowing parallel to the main river outside, again flooding new areas. It can then be suggested that the tributaries also be embanked, trapping the rainwater between the embankments of the main river and the tributary. The only route for this water to escape is through evaporation or seeping into the ground. Or else, it may have to be pumped into either of the streams. Should any of the embankments breach, then the people residing between the two embankments will meet a watery grave. No embankment can be guaranteed against breaching, not even in the USA or China. The cost of relief and rehabilitation would offset all the benefits that have accrued over the years in the event of a single major breach. It was for these reasons that the British never repeated the Damodar mistake for the remainder of their rule in India.

Seeking flood protection through embankments amounts to falling into a trap from which it is very difficult to escape. A section of engineers, however, believes that if a given amount of water passes through a reduced area, its velocity increases and so does its capacity to erode. When embankments are built along any river, the velocity of flow increases and the river water can erode the banks and dredge the bottom of the river thereby increasing the waterway of the river. More waterways would mean a greater capacity to carry discharge and hence the floods would be reduced. There is, however, no factual evidence from India, China or the USA to support this argument. The debate whether embankments increase the floods or decrease them, is yet to be resolved amongst the engineers. They also avoid any public debate by saying that every river has its own special characteristics and should be dealt with separately. They recommend or reject embanking scheme depending upon the social or political pressure brought on them. The arguments favouring or against the embankments are apparently technically so sound that nobody can point a finger at them. The fact, however, is that the benefit of this inconclusive debate goes to the politicians who take the decisions on embanking rivers, or otherwise, and the engineers only play a subservient role.

The British never repeated the Damodar embankments mistake, but allowed private landowners to build embankments at their own peril. The Calcutta Conference of 1897 could not reach any conclusion but paved the way for constructing embankments all over. Captain F.C. Hirst (1908) was carefully watching the growth of these embankments and commented, "In recent times, on the left bank of the Kosi, in the Purnea District, private enterprise has copied the work of the makers of the Bir Bund, giving temporary relief, which, as will be seen later, is probably a menace to future welfare."[46] He also denounced the way embankments were built in China on the Hwang Ho saying, "The Chinese, however, give us the best example of the deplorable results which wrongly designed attempts to benefit one generation have had on posterity, an important river, in the act of fulfilling a definite programme of land construction by the deposition of the sediment carried in its waters, was forced into a fixed bed, and maintained there by closing, with embankments, of the natural outlets, which permitted floodwaters to deposit the matter which they held in solution or suspension, on lands which sadly needed it. Each succeeding generation has been compelled to raise the height of the embankments, to make them keep pace with an ever-increasing flood level...

unusually heavy flood breaks down or overtops the embankments, and the pent-up waters deal death to the posterity of those who, originally in good faith, prepared the way for disaster…The terrible results of the embankment system in China should serve as a warning to Indian engineers; it is very doubtful if the warning has yet been taken; and it is more than probable that the heavy floods which in very recent years have devastated several of the North Bihar districts are mainly, if not entirely, due to the prevalence of embankments…An embankment, with little or no waterway through it for carrying off the floodwaters, is a glove thrown in the nature's face – an insult which she has not yet been known to leave unavenged."[47]

F.C. Hirst had spent seven years moving around the river basin. He wanted the issue to be debated widely and a debate did take place. W.A. Inglis (1909), the retired chief engineer of Bengal, replied to the points raised by F.C. Hirst but before doing so he made his position very clear, "By some of the engineers who had to deal with the rivers of Bengal, marginal embankments have been held as altogether abominable. By others (among) whom I number myself, it has been held that marginal flood banks, designed with discretion and with proper understanding of the factors of the case, are of service. It is, however, fully recognized that it is rather that they are a lesser evil than uncontrolled floods, than that they are in themselves a positive good."[48]

He added that, "It is true that all such rivers have certain features in common. They are liable to pass a high flood within their natural banks. They are all silt bearing to a greater or a less degree, and they are all liable to bank erosion. There is, however, a great variation in these factors, and I would lay a great stress on the necessity for the careful consideration of the peculiarities of each river."[49]

F.C. Hirst had raised the point of non-interference with the working of nature, in general, and with rivers in particular. He had also talked about 'throwing a glove in the face of nature' and its revenge. To this Inglis's reply was that it was true that people could not do anything to control or change the bigger forces of nature. They could neither cause the rain to fall, sun to shine or wind to blow. Yet they could interfere with some forces of nature and modify them. He maintained that every field that is ploughed or sowed with corn was an interference with nature. Through cross-breeding, human beings had modified plants and animals. They had constructed reservoirs to store water and applied it for irrigation without regard to any apparent intention of nature. They had protected river banks against erosion, dredged up sand and mud from the places where nature wanted them to remain. Inglis emphasized the need for understanding the limits within which such efforts be confined and that success depended on appreciating such limits and a sense of proportion.[50]

Inglis, however, did say that low height embankments could be built along rivers, which would hold floods to an extent and allow them to continue their process of land building. This is what Wilcox had also suggested while describing the Burdwan and the Damodar episode.

William Inglis, who retired on December 5, 1905 as the Chief Engineer of Bengal had a very good understanding of the entire flood situation in the province and had the authority to do innovative experiments. Yet, no such experiments that he professed or thought were good for the community, were done during his tenure. It is difficult to understand why the traditions like the ones in Burdwan were allowed to die. Such proposals are made even today and some engineers talk about controlled flooding with the help of embankments so that depressions in land (locally called *chaurs*) are slowly filled and the land reclaimed. Besides, when the floods are designed to take place by overtopping of the embankments, there is some sort of preparedness to face the eventuality. And this was precisely what farmers in flood plains, generally, or those in Burdwan in particular, were doing. But the state interfered unnecessarily in the community efforts to the detriment of the collective and traditional wisdom of the farmers and imposed on them a system of irrigation and flood control that was of doubtful efficacy. It also forced the community to bear the cost of its follies.

Now that the traditional wisdom is buried, it is difficult to revive such a system and convince farmers of the utility of partial or controlled flood protection. They will seek either full protection against floods or will be happy without one. The people need to be told through a massive education programme that floods cannot be done away with and have to be faced in some form or the other. In the absence of such a campaign, the people are unlikely to appreciate the futility of continuous embankments. They will keep on questioning the use of flood protection if it does not fully protect them.

Some elderly people living in the flood plains of Bihar are of the opinion that the British failed to understand the rationale behind the low height and weak embankments of the *zamindars.* Their function was to hold back small floods. After a stage, they used to prepare for breaching of the embankments and if the embankments did not breach on their own, they were cut en masse. Thus the floods were moderated automatically and the river was free to perform its duty of land building. The fields used to get the top layer water from the rivers, containing the fertilizing silt. They were never cast with coarse sand and their

fertility was never lost. If this arrangement had continued, people would not have thought of high and sturdy embankments. Thus these embankments were built based on the local needs and cooperation. These elderly people do not know how to analyze and present what they do annually, but they do say that in the past the flood levels were very low and that the fields got rejuvenated every year due to floods.

2.8 Constitution of the Orissa Flood Committee

The changed face of floods was not only restricted to Bihar, Purnea or Saharsa or to rivers like the Kosi; it affected almost all the flood-prone areas of the country because the development process to tame rivers and control their floods was virtually the same everywhere. There were embankments in the shape of railway lines, roads and also the ones along the rivers. At some places, canals were also being constructed. The British were reaping the harvest of their own doings and the floods were not declining. The administration was then forced to do some soul searching. A four member committee of engineers was constituted in Orissa on November 25,1927, "To investigate the nature of the flood problem in Orissa and to assess the importance of various causes and to advise as to the direction in which a solution can most profitably be looked for and the steps which should be taken either in the nature of remedial measures or further investigation."[51]

The committee members extensively toured the flood affected areas of Orissa from January to August 1928 and interviewed scores of officials, politicians, social workers and farmers. They concluded, "That the embankment system is at the bottom of their troubles is, we have found, fully realized by the people in Orissa, and one of the most insistent demand made to us by the inhabitants of the semi-protected area and unprotected areas is for the complete abolition of the canal systems and the throwing open of the fully protected areas to the spills of the rivers. They argue that the affect of this protection is to intensify the floods on the remainder of the country and as we have stated, there is a clear justification for this view. But the remedy suggested is so drastic that we are unable to support it."[52] The committee recommended that, "The problem in Orissa is not how to prevent floods, but how to pass them as quickly as possible to the sea. And the solution lies in removing all obstacles, which militate against this result. Unfortunately, the fact that the delta is inhabited prevents this policy from being pursued in its entirety, the most that can be done is to follow it steadfastly in so far as it is compatible with the maintenance of the population. To continue as at present is merely to pile up a debt which will have to be paid in distress and calamity, at the end."[53]

The regular breaching of embankments and canals, rising flood levels, waterlogging, stagnating pools and transporting of the flood problem from one place to the other in the name of flood control were agitating the minds of the people. They wanted to do away with these obstructions to the free flow of water and conveyed their concerns to the committee in no uncertain terms. The committee observed, "We do not, of course, intend to suggest that every embankment in Orissa should be leveled, still less that they should be leveled simultaneously. The process will have to be gradual commencing from the sea, and the case of each embankment will have to be considered on its merits. Some will certainly have to be altogether demolished but there are some which may be retained and still some which can be rendered innocuous by reducing their capacity for obstruction by the provisions of escape in them. Every embankment marked for permanent retention must, however, confirm to two requirements, it must offer no obstruction to floods in excess of certain dimensions to be determined in each case, and it must be absolutely secure from breaching even in an exceptional flood."[54]

At the end of their recommendations the committee said, "The removal of obstructions to the working of nature, whether in form of floods or tides is, we believe, the only cure for the troubles to which Orissa is now subject. If a policy to this end is pursued, except in so far as it must be relaxed to ensure the maintenance of the population, steadfastly and if need be ruthlessly, we are convinced that much of the distress which at present exists can be removed and stable conditions ensured throughout the country."[55]

The report of the Orissa Flood Committee seconded the thinking of the contemporary engineers that what was termed as the flood problem of the country was actually not a flood problem but the impedance to drainage. If the floodwaters are allowed to drain smoothly, the impact of floods would not be so severe. And if structures like canals, embankments, roads or the railways are built without taking care of the drainage through them, one should not hesitate to do away with them.

2.9 Patna Flood Conference (1937)

Though the objectives of the Orissa Flood Committee were to give its opinion about the flood situation in Orissa and recommend measures to reduce the sufferings of the people, it also revealed the contemporary thoughts of the people over the floods issue. By this time the role of obstructions to the passage of floodwaters was well understood and corrective measures were explicitly prescribed. The role of deforestation and the consequent soil erosion

and its relationship with drought and floods was also amply clear by this time. A three-day conference was arranged in November 1937 to take the stock of the flood situation in Bihar. Referring to the embankments along the rivers in Bihar, the then Governor of Bihar, Mr. Hallet, in his inaugural speech, said that, "There is the same problem in China, the same problem in America, in particular the Mississippi valley, where in spite of vast expenditure, in spite of the most expert engineering skill the embankments or the levees as they are there called, put up to keep the river under control, do not appear to have proved a success."[56]

Dr. Rajendra Prasad, later to become the first President of India, although he could not attend this seminar because of ill-health, sent a message for the seminar and it was read by Anugrah Narayan Singh. A part of his message read, "…but apart from the embankments and bundhs constructed for confining rivers there are many smaller bundhs, private, semi-private and public which have been erected for protection of particular areas. Then we have the biggest embankments constructed by the Railway, crossing and re-crossing the province, east to west and north to south practically throughout its length and breadth….when private embankments are considered responsible for fury of floods in some parts we dare not ignore the impact of these biggest embankments in the shape of these railroads and District Board Roads. I have noticed that while the water on one side of the railway line is several feet deep, on the other side there is hardly any water at all…No wonder that almost every year there are breaches but what surprises one is that the breaches are simply filled up as soon as the flood passes away and it is only rarely that they are converted into culverts or bridges for allowing the flood water to pass through…..So when embankments are held responsible for floods and a suggestion is made that they should be done away with, the embankments that ought to attract attention first of all are the railway embankments and the District Board Roads. This, of course, would be a counsel of despair and I am not without hopes that engineering skills should be able to devise other methods to deal with the situation."[57]

Capt. G.F.Hall, then the Chief Engineer of Bihar, participated in the debate saying, "As my knowledge of flood condition increased, I began to doubt the efficacy of the bundhs and gradually came to the conclusion that not only was the flood prevention undesirable but that bundhs are primary causes of excessive flooding, and I think that (a) majority of people now agree that provided that they are evenly distributed and are of moderate depth, north Bihar needs floods and not their prevention, notwithstanding the numerous articles in the press to the effect that the government must take steps to prevent floods."[58] He feared that the way the bunds were constructed or even if the status quo was maintained, "… we are storing disaster for the future though we may not be here ourselves to witness the climax."[59] Capt. Hall also said that the Americans had controlled rivers along their entire length and they had unlimited resources. The origin of the Kosi lay in Nepal and Bihar did not have unlimited resources for controlling floods. There was a strong correlation between the available resources and practical engineering but it did not mean that the cheapest solution was the best option, usually far from that. He cautioned that going beyond one's means to take up any project was not desirable.

While the conference was in progress, the Hwang Ho embankments in China had breached at many places and thousands of people were killed in the deluge. Capt. Hall read these reports to the audience.

The first proposal to build a dam across the Kosi, in Nepal, came from the secretary for water resources of Bihar, Jimut Bahan Sen, in this conference. He narrated the hardships faced by the people in the Kosi basin and said that the people there were ready to contribute their might for the construction of a 368km long embankment along the river but that was no solution. The only solution, according to him, was to construct a dam across the river where it disgorged into the plains. The constraints to the proposed construction were that, one, the location was in Nepal and its consent would be needed, and two, its cost would be enormous.[60] While a majority of the participants in the conference were against constructing embankments, there was a small pro-embankment lobby led by Nirapad Mukherji. He was of the opinion that, "The experts wanted the Government and the public to become anti-bundh minded and let nature take its own course. That is (a) defeatist mentality but (the) government must help (the) suffering humanity and the experts must find the means…If our experts cannot cope up with nature, let them be brought from outside. Given time, our expert may change his mind."[61]

Capt. Hall replied to both these points made by Sen and Mukherji. He told the gathering that, "The Nepalese control the upper reaches of the Kosi and the Government of Bihar has anything but unlimited funds to expend on river training…Mention has been made about securing the cooperation of Nepal. Much as that is desirable I can hold out little hope of such cooperation. They were invited but declined to send a representative to the conference. I have had some experience with the Nepalese Government as regards river training and boundary disputes and I am afraid, I can form no other conclusion that they will never put themselves to any inconvenience for the benefit of Bihar."[62]

And to the suggestion of Nirapad Mukherji, Capt. Hall replied, "It has been stated that the anti-bundh policy is defeatist and non-constructive. If the matter stopped there, the accusation would be to some extent true, as far as I was concerned with the discussions at this conference, I wanted to make a start by establishing one point and one point only as a preliminary to Government deciding a flood policy, i.e., that bundhs obstruct free flow of water and accentuate instead of relieve the intensity of floods. That point established, the first stage of a constructive policy is to remove obstructions, thereafter Government can devise means of adapting the natural tendencies of rivers to benefit the people instead of opposing the natural tendencies to their detriment…Though I am not directly concerned with the Bihar finances I think I am right in saying that we could never afford to spend an initial ten crores on training a single river with uncertain results."[63]

2.10 The Politics of Floods Control

In an interesting turn of events, while Capt. Hall, being the Chief Engineer of the state, was opposing the embankments along the rivers tooth and nail, a survey of all the old and new channels of the Kosi entering through Nepal was done by the Tirhoot Waterways Division of the newly elected government of the state, in 1937-38. This decision was taken by the popular Government of Shrikrishna Sinha to ascertain whether a suitable training scheme for these channels was feasible.[64]

This study concluded that the training of the Kosi be attempted. The estimated cost of this scheme was Rs. 10cr. It was the futility of this scheme that Capt. Hall mentioned in the deliberations at the Patna Flood Conference. With Capt. Hall as the chief engineer, it appears, it was not possible for the Shrikrishna Sinha government in the state to go ahead with the proposal. After this study, a team of experts visited the Kosi basin in Nepal and Jimut Bahan Sen was a member of the team. That visit was the basis of his mentioning the proposed dam on the Kosi in Nepal, at the Patna Flood Conference. Since this site was located in Nepal, the British Government found itself helpless in the matter. Capt. Hall was, however, clear on both the counts; he would not allow any embankments on the Kosi to be built and, at the same time, he did not expect the Nepalese to "put themselves to any inconvenience for the benefit of Bihar."

Still it is no less intriguing that, while on one side, there were engineers like Capt. Hall, Bradshaw Smith and Peter Salberg, who were thoroughly opposed to embankments, and they had the support of politicians and social workers of their times, the government succeeded in carrying out a survey of the Kosi basin, the motives for which were very clear, i.e., building embankments on the Kosi. The differences between the words and deeds became obvious from this point and this, probably, was the beginning of the politics of floods in the state.

Proposal of Sir Claude Inglis on the Kosi (1941)

The next event on the flood control front in Bihar was the investigation of the Kosi by Sir Claude Inglis, who was then the Director of the Central Irrigation and Hydrodynamic Research Centre –Poona. According to Inglis, the Kosi would continue its westward march till its sediments filled up the low lying areas of the Tilyuga and the Balan and then possibly, the higher land elevations south of Tamuria would prevent it from moving further west. Inglis attributed erosion and landslides in the upper catchment as the cause of the Kosi's meander and in the lower catchment he thought that deforestation and extension of agriculture was responsible for soil erosion. He wanted more data on the river and its catchment which could not be obtained because of the Second World War.

Ghosh Report on the Floods of North Bihar (1942)

The Bihar floods were once again extensively studied by Rai Bahadur P.C.Ghosh in 1942 and the study encompassed all the big and small rivers of north Bihar. This was an era of 'no bunds' and the underlying principle of distributing floods over as large an area as possible was reflected throughout this report. One can feel the shadow of Capt. Hall and his views in this document as he was still the Chief Engineer of the Public Works Department in Bihar. Capt. Hall, in the foreword to this report, wrote, "Shortly after the Bihar earthquake of 1934, several parties of Congress workers in laudable but misguided endeavour to be helpful invaded north Bihar and proceeded to construct bundhs across innumerable waterways completely blocking many roads and railway culverts and drainage channels. If there was one thing needed more than any other after the earthquake it was the drainage of the sub-soil water which had partially inundated considerable areas and complaints of these voluntary activities which were retarding it poured in from all quarters. The commissioner asked me to depute an officer to guide these activities to useful channels but I could spare none. He, therefore asked the Government of Bihar to find him an engineer and the Government of Bengal kindly placed the services of Rai Sahib P.C. Ghosh at his disposal with title of Embankment Engineer, though his chief function was to prevent their construction."[65]

So much was the aversion to the construction of embankments along the banks of rivers in those days that the administration did not mind deploying force to prevent it. Ghosh quotes a letter from W.L. Murrel, then Superintending Engineer-North Bihar Circle, dated February 6, 1942 to the Deputy Chief Engineer – Irrigation, Patna, which mentions about the Tiljuga, the stream through which the Kosi was flowing in Darbhanga those days. In he wrote, "Silt must be deposited over Darbhanga district west of the Tiljuga bundh of the Kosi. If it is not, and the Tiljuga embankment breaks, as it must in future, people will be drowned not by tens or hundreds, but by thousands. The population must get out of themselves, being driven out by inexorable operation of the laws of nature, or they must go out by administration. As moving the people will be a long process, it should be commenced at once, if it is to be put in effect at all. In the mean time, to prevent future great loss of life by drowning it appears necessary for the repairs to the embankment to be forbidden annually, and even twice annually, the promulgation by beat of drum in the villages, and the village head man signing for receipt of a notice that the repairs are forbidden. In addition, the embankment should be patrolled, and a few armed police should be sent to the spot as soon any repairs are attempted. The very prompt exhibition of little armed force alone will doubtless prevent repairs and could also prevent much trouble later."[66]

On the question of facing the Kosi the report suggested construction of dams on the tributaries of the Kosi in Nepal to retard the velocity of flow of the river where it entered into the plains. It also suggested afforestation to reduce the silt load as the river came to the plains to spread the waters into various live and dead channels. But the report found the data wanting and suggested careful studies for the future.

Post War Kosi Plan (1945)

This plan to tame the Kosi was prepared when freedom from the British Rule was in sight and the time had come to shed the old values. This time a proposal was made to embank the Kosi, by confining it to a definite channel by building marginal embankments, 16km or so apart, running parallel from the Nepal foot hills to the Ganges, at an estimated cost of Rs. 10cr.[67] The plan ran into rough weather when it was forwarded to the Central Government for approval. The experts there recommended the execution of the plan which was suggested by Jimut Bahan Sen in the Patna Flood Conference of 1937.

Initiatives on the Proposed Barahkshetra Dam on the Kosi

In the flood season of 1945, the Maharaja of Darbhanga, Sir Kameshwar Singh, invited the Viceroy, Lord Wavell, to the Kosi area to have a feel for the floods there. Following this viceregal visit the Chairman of the newly formed Central Water Irrigation and Navigation Commission (CWINC), Rai Bahadur Ayodhya Nath A.N. Khosla was given the responsibility of preparing a preliminary report of the Barahkshetra Dam Project in 1946. He was to be assisted by two senior officers of the Geological Survey of India namely J.B.Oden and K.K.Dutta. The United States Bureau of Reclamation also helped in the preparation of the preliminary report of this proposed dam at Barahkshetra in Nepal. Renowned authorities on dam construction in the USA, Dr. J.L.Savage, Walter Young and the geologist F.H.Nickel, who had helped build the Boulder Dam, the Grand Coulee and the Shasta Dams, etc., were also consulted before the preliminary report was finalized.

While a technical solution to the problems faced by the people in the Kosi basin was being attempted, the finance minister of the state, Anugrah Narayan Singh, in 1940, suggested shifting the population of the Kosi basin to a safer area. He was of the opinion that instead of suffering the vagaries of the Kosi it was better that the people shifted to some other place. He suggested that such a place could either be in the hilly terrain of Ramgarh in Hazaribagh or in the places that the Kosi had abandoned now. This proposal of Anugrah Narayan Singh faced stiff resistance from the affected people because they were used to living in the plains and were strongly opposed to the idea of living in the hilly terrains of Hazaribagh let alone shifting to such a place. The Bihar Government acquired some land in Ganpatganj in Madhepura, wherefrom the Kosi had passed some years ago, to resettle these people but the effort failed.[68]

The statement given by Anugrah Narayan Singh in the Bihar Vidhan Sabha, on May 30, 1946, is very important. He said that, "Suggestions have been made that the population residing in the Kosi area should be compulsorily evacuated and settled down in some other place. Attempts have been made to realize it with the help of non-officials but that has not been successful. Friends have made a suggestion now that those people should be compulsorily asked to leave and settle elsewhere. I do not know whether this scheme will prove successful but certainly attempts will be made to examine this possibility."[69] It seems, that with the growing possibilities of constructing the Barahkshetra Dam, the idea of resettling people in different places was dropped.

In addition to the efforts of building of the Barahkshetra Dam at the official level, aggressive lobbying for it was also going on at the people's level. Khushi Lal Kamat (83), a former Vice–Chairman of the Darbhanga District Board, narrates a very interesting story of the events of that time. (See box: Facts and Figures, Not a Cock and Bull Story)

A meeting of the Kosi sufferers was held at Nirmali (then Bhagalpur district and now Supaul) on the November 16-17, 1946 under the leadership of Rajendra Mishra. Slogans like 'Change the course of the Kosi', ' Build a dam on the Kosi', 'Provide electricity to every household' were raised at this meeting. A pamphlet issued on the occasion claimed, "In this atomic age when the oceans are being dried to convert them to fertile lands, nothing is being done to check the devastation of the Kosi, even though our own government has been constituted….unless a child cries, the mother does not feed him. Unless the people of the Kosi belt organize themselves and start a big movement to raise their voice that is heard, our good days will never return."[70]

Facts and Figures, Not a Cock and Bull Story

The Kosi did not start flowing in this area till the beginning of the 1940s. I had contested an election for a seat on the Darbhanga District Board in 1943 and won. I became the Deputy Chairman of the Board later. Madhubani was our sub-division. There was a sudden flood in 1943 and the Kosi had started knocking at our doorsteps. I put in some personal funds and some money from the Government to run a modest relief programme. We had heard horrifying stories of the Kosi floods and wanted some solution to that problem.

Hari Nath Mishra used to represent our constituency in the Bihar Vidhan Sabha. I went to Patna once and told him that something must be done for the Kosi. It was resolved that Hari Nath Mishra would go to Delhi to meet Jawahar Lal Nehru with a request that he does something for the Kosi. This was around 1946 and before Hari Nath Mishra could go to Delhi, it was already 1947. He had no application or any report with him when he met Nehru. Nehru was very angry with him and told him that he did not want to hear a cock and bull story, he wanted facts and figures and asked him to leave. After his return from Delhi, Hari Nath Mishra told us about the treatment meted out to him in Delhi.

We, however, did not lose hope. Both of us went to Brij Nandan 'Azad' who was then the Editor of the Indian Nation and told him the entire story. Azad said that he would provide us with the facts and figures but the report would have to be written by us. We agreed. He knew me as I used to write for his paper occasionally. He also agreed to accompany us to Nirmali and took a photographer along with him. Being a representative of the Relief Commissioner, Nirmali and Mahadeomath fell in my jurisdiction. I requisitioned a motor boat from the collector and took the Press team around the area. It was resolved that we had to make the report very touching lest the purpose of drafting it be defeated. We got some cattle tied with pegs in knee deep water and asked some people to climb the roofs of their huts with utensils and other articles. We caught hold of a cat and put it on the roof. We went into the court yard of the houses in a boat and photographed women cooking food sitting over *chowkis*. This scene was real.

Then we proceeded to Mahadeomath. There was a road bridge near Rauahi Narendrapur where some cowherds were grazing their cattle. I gave a tip of one rupee to one of them and asked him to get into the river below along with his buffalo and push it out of the water. We took photographs with half the buffalo inside the water and half outside it. The editor was happy. The photographs were now available and he had the facts and figures. We left the boat near Nirmali and returned to Patna to write the report. Azad helped us a lot. The report was ready and Hari Nath Mishra went to Delhi, once again, with the report, full of facts and figures. This time, Nehru was highly impressed with Hari Nath Mishra's professional work and promised him that he would do something. Hari Nath Mishra told us the story after his return from Delhi. What was the impact of this report on Nehru was not known but when the Congress list was being finalized in the next election, it contained the name of Hari Nath Mishra also. When it was put before Nehru he saw his name in the list and asked if he was the boy from the 'Kosi'? He put a tick mark against his name when told in the affirmative.

— Narrated by Khushi Lal Kamat
now deceased, former Vice-Chairman of
Darbhanga District Board, Vill. & PO Sarauti, Madhubani District

Nirmali Conference of Kosi Sufferers and the Proposed Barahkshetra Dam (1947)

A conference of the Kosi sufferers was held at Nirmali on April 6, 1947. It was attended by C.H.Bhabha (not to be confused with H.J. Bhabha, the well-known nuclear scientist), then Member, Ministry of Works, Mines and Power, Dr. Rajendra Prasad, Rajendra Mishra, Hari Nath Mishra, A.N. Singh, Binodanand Jha, Baidya Nath Chaudhary, Dhanraj Sharma, B.P.Jhunjhunwala, Jamuna Karyee and Dr. Shrikrishna Sinha among others. Bhabha explained to a gathering of about 60,000 that it was proposed to construct a large dam of concrete about 229m high at Barahkshetra near Chatra valley in Nepal. It would produce 1200MW of power and would irrigate 1.25Mha of land in Nepal and India. Two barrages were also proposed on the river, one at Chatra in Nepal and the other at the Indo-Nepal border. The proposed dam would cost Rs. 100cr and would be completed in 10 years.

In his long speech, Bhabha said that, "You must remember that the modern technique of river control and river training is of comparatively recent origin being, indeed, derived from the new water control technology which is hardly more than a quarter a century old even in the advanced countries of the west. And in this country it was only about five years ago that this technique gained general acceptance amongst our water planners and river engineers. Till then our experts were continuously oscillating, like the Kosi River itself, between two divergent views. One school believed in embankments or bunds, ordinary bunds, ring bunds or marginal bunds. The other school swore '*lassez-faire*' ascribing all ills of over-flooding to the presence of these embankments themselves and advocating their systematic demolition."[71]

Bhabha further told the audience how the Bihar Government prepared the post-war plan of 1945, estimated at Rs. 10cr, to tame the Kosi which involved construction of embankments on its banks from Chatra in Nepal to its confluence with the Ganga. He continued, "This scheme was referred to my department for comment and advice. Fortunately at this time we were already working on a scheme of multipurpose development of the Damodar River through storage reservoirs and my department at once detected the inadequacy of the traditional approach propounded by the Bihar experts and referred it to our newly established Water Planning Organization of the CWINC for their comments. The commission supported the views expressed by our administrators and strongly advocated a multipurpose approach on the lines of the Damodar River scheme. This gentlemen, is the genesis of the present Kosi scheme and the central government's interest in it."[72]

Bhabha, in no uncertain terms, called the river control through the help of embankments, an outdated technique and clarified the circumstances under which, despite the best intentions of the government, nothing was done because the engineers themselves were not clear and were involved in the debate of 'bunds' or 'no bunds'. He also explained how the newly developed scheme of flood control through storage reservoirs would be utilized to achieve the goal. Dr. Rajendra Prasad, then Member, Agriculture, expressed his views saying that he wished he would survive to see the Kosi tamed and lush green fields in the basin. In the same context, Dr. J.L.Savage told mediapersons on April 7, 1947 at Barahkshetra that from the design point of view the high concrete dam at Barahkshetra would be able to withstand the shocks of earthquakes and it would be possible to pass off heavy floods over the spillway of the dam. He discussed the embankments made on the Hwang Ho River in China and was categorical in asserting that taming the Kosi with the help of embankments would be disastrous. He said that the bed of the Yellow River had been recorded as much as six meters higher than the surrounding country level. Under these circumstances it was quite natural for the river to become unstable and those living outside the embankments of such rivers would always be prone to disasters.[73]

Dropping the Barahkshetra Scheme: Constitution of the Majumdar Committee

This scheme of a dam at Barahkshetra was so widely covered in the media from 1946 to 1951 that it appeared that the work on it would commence any day but it kept getting postponed for various reasons like rains, scarcity of funds, the need for further investigations, etc. At one stage the Bihar government was even made to choose between the Gandak and the Kosi projects. In the meantime the project cost shot up to Rs. 177cr, from Rs. 100cr. The suspense came to an end when on June 5, 1951 a committee was constituted under the chairmanship of S.C. Majumdar, Advisor Engineer, Government of West Bengal with four members on its panel, to give its opinion on the Barahkshetra DamProject. The other members of the committee were M.P.Matharani, Chief Engineer, Gandak Valley (Bihar), N.P.Gurjar and G.Sunderam, Chief Engineer, Electrical (Madras). The terms of reference of this committee were to determine:[74]

i) Whether the project planning is sound?

ii) Whether the sequence of the execution plan and the design is correct?

iii) Whether the estimates for the command area for irrigation and power production are correct?

iv) Whether the sequence of power production is alright?

v) Whether the works executed in the first four phases will be adversely affected by floods during their implementation?

The Committee generally approved the proposed plan. It had no other option because the scheme was prepared by the best available experts in the world but was of the view that:

a) A sum of Rs. 48cr be spent on the first four phases of the project even though flood control would be effectively achieved only during the fifth phase.

b) In the seventh phase of the project implementation 1800MW of electricity would be produced at an investment of Rs. 60cr.

It was said that in 1952, only 1750MW of electricity was being produced in the country from all sources. The maximum demand for power from all the power houses in the country was estimated at 1100MW and the rate of increase in the demand for power was put at 50MW annually from 1940 to 1950.

The demand could increase marginally in the years to come. The new power houses that were being built at the time were further likely to produce 1000MW additional power. Thus, the Committee came to the conclusion that a huge block of power would remain unutilized for a long time and "a large capital will be blocked unproductively in the name of power production." Also, it felt that the benefits of flood control would be available quite late in the plan and it recommended that the proposal of Barahkshetra be dropped.

If we look at the power position in the states of Bihar, Uttar Pradesh and West Bengal these days, the hollowness of these recommendations becomes obvious. The immediate outcome of the recommendations of this Committee was that the curtain was dropped on a scheme which had been in the headlines for the previous six years.

The Belka Reservoir Scheme

The Majumdar Committee, however, came out with an alternative proposal which was to include:[75]

a) An earthen dam of 26m to be constructed 14.4km downstream of Belka hills with a concrete spillway. The total length of the dam was to be 19.2km of which the spillway portion was 762m long. The reservoir was to have a total storage capacity of 220,000 ha-m of which 104,000 ha-m were meant for silt and the rest for the storage of water. This dam would be capable of converting the hitherto maximum observed discharge of 21,150cumecs (1927) to 8500cumecs and the maximum observed discharge of 13,550cumecs in 1948 to 6000cumecs. It was estimated that the silt storage capacity of this dam would be exhausted in 17 years and the dam would be ineffective in 50 years time.

b) A hydroelectric generation unit to produce 68MW for use in Bihar and Nepal,

c) The Eastern Kosi Canal system to irrigate 615,000ha in Bihar

d) The Western Kosi Canal system to irrigate 470,000ha land in Bihar and Nepal.

e) The Nepal Eastern Canal system to be constructed exclusively for Nepal, and

f) Additional power generation of 30MW making use of canal falls.

This scheme was estimated to cost Rs. 55.5cr. A 56km long embankment from Kusaha to Bhagwanpur was also a part of this scheme to prevent the westward displacement of the Kosi.

People opposed this scheme vehemently at the planning stage itself. Their logic was very simple. If the Belka Dam was capable of intercepting the incoming silt and sand, the water coming out of the dam would be clear and there would be no change in the course of the river. Hence there was no need to construct the embankment from Kusaha to Bhagwanpur and if the silt and sand did not get trapped in the reservoir, then there was no justification for the reservoir. Laliteshwar Mullick commented, "If it is true that the floods will be controlled completely by constructing the Belka or Barahkshetra Dam then the embankment is not needed. But if that does not happen then no government, especially a democratic government, has the authority to obstruct the natural flow of the rivers and expose the people living in a particular area to disasters and destruction."[76]

Incidentally, the Chairman of the Belka Committee, S.C. Majumdar, when he was the Chief Engineer of Bengal in 1940, had made a very interesting comment about embankments. He wrote, "In fact, having regard to our experience in Bengal, construction of flood embankments as a flood controlling measure would be like mortgaging the future generations to derive some temporary benefit for the present generation."[77] Within a span of only twelve years Majumdar had adopted a diametrically opposite stance.

The Belka Dam Proposal also gets Kicked Around

The government, however, was not in a position to implement this downsized scheme either and the people suspected the motives of the government. The proposal was debated in the Bihar Vidhan Sabha. On September 7, 1953 Jay Narayan Jha 'Vineet' asked the

government in the Vidhan Sabha how much time it would need to tame the Kosi and the devastation it caused year after year? The Irrigation Minister of Bihar, Ram Charittar Singh, replied that, "There was a meeting in the Central Water and Power Commission on July 22, 1953 and generally the views expressed there indicated that the Belka site was the best location for building the dam and the canal. CWPC was asked to go ahead in this regard and prepare a detailed plan…. it was hoped that the work would start in 1953."[78]

Lahtan Choudhary expressed his apprehension in the Bihar Vidhan Sabha that the Belka scheme had been dropped, saying, "What kind of a labyrinth is this? One after the other, schemes are made only to be dropped subsequently. Experts after experts keep coming but nobody knows whether the assurances given by the government will ever be fulfilled. It is said about the Belka Dam that the silting capacity of the reservoir will be exhausted in 17 years and it is not wise to invest so much money for that short a period. But this was known from the very beginning….then why is this scheme being dropped today citing the 17 years' disadvantage."[79] The Government, however, asserted that it had no intention to drop the scheme.

Ramesh Jha complained that only a few days earlier, the Irrigation Minister had said that the Belka Dam would be built shortly and it was only a few days earlier that a meeting was held under his chairmanship in which an expert had said that it was doubtful whether the Belka Dam would be built. The central government would issue a statement in the Parliament that the dam at Belka would not be built and the state government would issue a statement in the Vidhan Sabha that it would be built. Who was to be believed?[80]

Plans were being made, voices were being raised, assurances were being given while the Kosi flowed quietly. Disgusted with the state of affairs, a delegation of Bihar Congress party members met Jawahar Lal Nehru on August 11, 1953 to tell him that the dilly-dallying by the government over the Kosi problem was harming the image of the party. This delegation was led by leaders like Hari Nath Mishra, Lalit Narayan Mishra, and Satyendra Narayan Agrawal. It also met with V.T. Krishnamachari, Deputy Chairman, Planning Commission and Kanwar Sain, Chairman of the Central Water and Power Commission. At this time the Belka issue was not resolved and it was left to be discussed at a meeting of experts. As the pressure on the government was mounting, J.L.Hathi stated in the Lok Sabha (September 29, 1953), "Investigations are still in progress and it is expected that within six months the investigations may be completed. It would then be possible to know what particular scheme will be taken up for irrigation and flood control…as far as the embankment on the west bank is concerned, there is no difference of opinion. The question, however, is that if the dam is to be of a greater height, the strength, dimensions, etc. of the embankment may have to be revised. Unless the first question is decided, it will not be possible to decide the second….The government is completely aware of the people's feelings and is taking all possible actions to start this project as early as possible."[81]

Nehru visited north Bihar on October 31 and November 1, 1953 and that set the ball rolling. The Government of India constituted another committee of experts comprising of Venkata Krishna Aiyer, Chief Engineer of Andhra Pradesh, Kanwar Sain, Chairman, Central Water and Power Commission, M.P.Matharani, Chief Engineer of Bihar, and N.K.Bose, Director, Irrigation Research Institute, Calcutta. It was asked to give its opinion on the status of the current Kosi plan. All the four members aerially surveyed the area on December 10, 1953 and submitted their final report on December 13, 1953. Based on this report, Gulzari Lal Nanda presented the final plans of the Kosi Project in Parliament on December 14, 1953. This scheme is also known as the 1953 scheme of the Kosi or the CWPC Plan (1953) for the Kosi.

The Kosi Plan 1953

The 1953 Kosi Plan had three basic components:

(1) It proposed to build a 4.8km long barrage upstream of Hanuman Nagar in Nepal with an afflux bund of 1890m on the eastern end and 3811m on the western end. It was expected that the length of these afflux bunds would be 12.8km. The estimated cost of this part of the project was Rs. 13.27cr.

(2) Flood embankments to limit the flow path of the Kosi were also proposed on either side of the river. On the western bank, 121km long embankments were proposed from Bhardah in Nepal to Bhanthi in Saharsa district of Bihar. A 99.20km long eastern embankment was proposed from Bhim Nagar to Bangaon. Ring bunds were proposed around Mahadeo Math and Nirmali to protect these towns against the onslaughts of the Kosi. Marginal embankments on the Tiljuga and the Balan rivers together with a 19.2km long embankment upstream of the eastern afflux bund were also a part of this package. This entire work was estimated to cost Rs. 10.67cr and it was expected that once constructed, the embankments would protect an area of 214,000ha.

(3) The Plan proposed to construct the Eastern Main Canal System of the Kosi to irrigate 547,000ha of land in Saharsa and Purnea districts of Bihar at an estimated cost of Rs. 13.37cr.

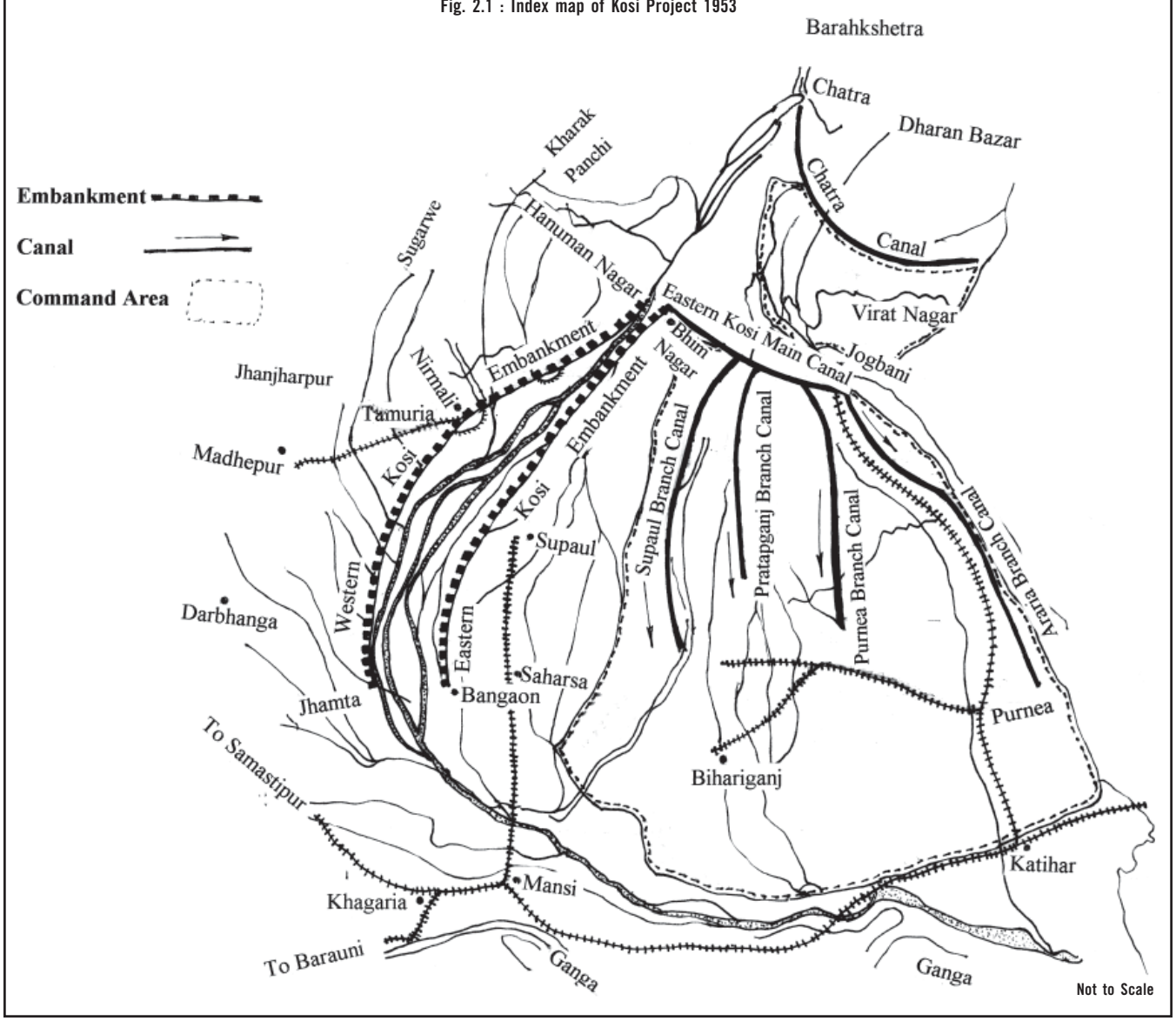
A map of the scheme, as published in the newspapers between January10 and 15, 1955 is shown in Fig. 2.1. The total cost of this project was Rs. 37.31cr. The proposed Chatra canal in Nepal was expected to irrigate 73,000ha at a cost of Rs. 3cr. There was a proposal to install a power house in the main canal but it was not included in the 1953 scheme.

This scheme, when compared with the plans suggested by C.H.Bhabha at Nirmali on April 6, 1947 brings one to the same point from where the flood control journey had started. Events had turned a full circle towards the end of 1953 after spending almost seven years and over crore rupees on investigations. The engineers, however, left a way out in their recommendations to escape any future responsibility for failure of the embankments. Debesh Mukherji, Chief Engineer of the Kosi Project (1965) explained, 'It must be mentioned here that the present scheme is not the final reply to the Kosi problems. The final and lasting answer lies in the construction of a dam across the Kosi as well as some check dams across its tributaries. The construction of the dam must follow immediately to make the gradient control more effective and levees to put up the purpose for which they have been put up.'[82]

As a matter of fact, when Nehru toured the Kosi area in October 1953 he was so moved by the miserable plight of the flood victims in the basin that he wanted something to be done immediately to provide succour to them. Unfortunately, immediate intervention can only be done locally and the only option is to separate the people and the river with the help of a wall in the shape of embankments. This can be done quickly but its long term impact is disastrous.

The lack of seriousness and effort that had gone into the formulation of this project are described by

Fig. 2.1 : Index map of Kosi Project 1953



Akhauri Parmeshwar Prasad Sinha, former Chief Engineer of Bihar. (See Box: I Will Tell You The Kosi Project Story).

Sanctioning of Political Embankments

The decision to embank the Kosi was not only political, it was based on emotions and non-technical considerations. It was contemptuous of the debate against embankments that spanned about a century and had been going on since the Damodar fiasco. The flood victims were time and again told, for almost over a century, that embankments were an evil that ought to be avoided as far as possible. The same people were now being told that embankments would solve their problems. Doubts were expressed over the efficacy of embankments and the condition of the people living in

I Will Tell You The Kosi Project Story

Akhauri P. P. Sinha

I became the P.A. to the Chief Engineer, Desh Raj Mehta, in 1952 and had the rank of an executive engineer. One morning the Chief Engineer sent me a note that the Irrigation Minister wanted to make a statement on the Kosi Project in the Vidhan Sabha. This would have been in 1953. I wrote back to him to instruct my steno to come to the office at 09.00 hrs and I would dictate him a statement.

I dictated three pages. The first page contained the past efforts to tame the Kosi, the second page contained an analysis of all the proposals and the third page contained the most appropriate and timely proposal. The first page was related to the Barahkshetra Dam that was also studied by the American engineers and the gist of that report was that the dam would be located in a highly seismic zone and should the 237m high structure fail, all the water stored in the reservoir would come gushing down and wipe out towns up to Bhagalpur. That was the sum total of the 21 page report. The other point to ponder was the sediment load of the river water. The Barahkshetra Dam was to take about eleven years to build and half its reservoir space would be filled in five years.

Then my report talked about the 80 feet high Belka reservoir that was going to produce far less electricity as compared to the Barahkshetra Dam. And its life span was not more than 40 years. The third proposal was to construct an afflux bund, 25 feet high, north of the proposed Birpur Barrage and embankments on both sides of the river below the barrage.

This was followed by a report of the visit of Lord Wavell and the inspection by Nehru. I quoted from both the reports. Then there was the statement of Nehru in Parliament that the government was determined to control this 'river of sorrow'. Having said all that, on the third page I said that on one hand were these dam proposals and on the other, there was a proposal for the afflux bunds and the embankments. The life span of these embankments may not be more than 30 or 40 years but to construct them we would neither need American engineers nor their machinery. Indian engineers could do this job and at least, half of them were available in Bihar. According to preliminary estimates the cost of this project might not exceed Rs. 100cr. This work could be started immediately in view of the assurances given by the Government of India, the concern shown by the Government of Bihar and the resources available at hand.

I wrote only these three pages which no one other than Desh Raj Mehta read. He was satisfied when he read the second page that all the technical matters had been covered and he was very happy with the third page that I wrote. This page mentioned that half the technical personnel needed for the project were available in Bihar and the estimated cost was affordable. He signed the papers and kept a copy with himself for reference and it was with this copy that we went to the Vidhan Sabha.

The Chief Minister announced in the Vidhan Sabha that the Irrigation Minister would give a statement on the Kosi Project and the minister read the report that I had written verbatim. I was listening to my report sitting in the Vidhan Sabha's Officers Gallery.

You can well imagine how much effort went into the preparation of this report. This must be there in the proceedings of the Vidhan Sabha. This is how the Kosi Project started.

- Based on a conversation with Akhauri P. P. Sinha,
Former Chief Engineer of Bihar, (now deceased) on September 25, 1985.

304 villages that were likely to be trapped within the embankments. These people were, not surprisingly, opposed to the embankments. The attitude of the government was a bit defensive and all out efforts were made to convince people that the government would leave no stone unturned for their well-being and that they ought to approve the construction of the proposed embankments.

The Planning Minister, Government of India, Gulzari Lal Nanda issued a statement in the Lok Sabha on May 3, 1954 that the plan of the project was perfectly alright and he quoted Wang Hu Cheng, China's Chief of Water Conservancy, and two American experts Maddock and Torpen who had supported it. He also said that the project had been formulated on the basis of the experience gained during 1946-53 and all the aspects of the project had been very clearly looked into.

The fact, however, was that whatever investigations were made or experience gained till the constitution of the Majumdar Committee in 1951 was related to the proposed dam at Barahkshetra and not the embankments on the Kosi. The need to constitute the Majumdar Committee arose because the government did not have the requisite resources to construct the Barahkshetra Dam at an estimated cost of Rs.177cr in 1952 and it was looking for a cheaper solution. In 1954, T.P. Singh, Chief Administrator of the Kosi Project wrote, "…but apprehending the huge cost and the time needed to complete the project, the execution of the scheme had to be suspended."[83] The Majumdar Committee also did not have much to comment on the Barahkshetra Dam proposal because the persons who designed it or were associated with it were the best available hands in the world. But despite this, if the government decided to constitute a committee, frame the terms of reference (ToR) for it and wanted it to probe the issue, it was obvious that it was not interested in the Barahkshetra Dam nor did it have the financial capacity to build the same. The ToR for the committee needed no explanation. The Majumdar Committee got the clue and did precisely what the government wanted it to do – quash the Barahkshetra Project. Also, it did not deter S.C. Majumdar, who was so concerned about 'mortgaging the future generations', from recommending an embankment on the western side of the Kosi.

But Belka Dam also was not a cheaper option nor was it going to take less time to complete. T.P. Singh argued, "The Belka scheme could not be taken up for construction because the projected benefits were not in tune with the costs. In the meanwhile, public pressure to do something concrete was mounting to the extent that the central and the state governments requested the Central Water & Power Commission to prepare some scheme, keeping in view the financial resources of the country, that could be implemented immediately."[84]

Besides, the decision to embank the Kosi was taken after Nehru's visit to Bihar in early November 1953 and the official sanction was obtained in December 1953, in just one-and-a-half month's time. It was certainly not decided on the basis of the experience gained during 1946-53.

Putting The Cart Before the Horse

As an afterthought, in May 1954 the Government of India sent Kanwar Sain, Chairman of the CWPC and K.L. Rao, Director, CWPC to China to study the performance of the Hwang Ho embankments and perhaps to seek further justification for embanking the Kosi. After all the Kosi embankments had already been approved in 1953 and a formal announcement to that effect had been made in the Lok Sabha. These experts well understood their mandate and admirably fulfilled it. They eulogized the public cooperation and the management aspects in the river valley projects in China and downplayed the technical difficulties and the problems created by the Hwang Ho embankments.

After returning from China, they wrote in their report that, "While most of the silt carried by the Yellow River is fine silt, the Kosi carries mostly fine to coarse silt. If the Yellow River is able to discharge the tremendous silt charge smoothly to the sea, there is no reason why Kosi cannot be harnessed in such a way that it will also take away with its waters all the harmful silt that cause the lateral shifting of its course, if measures are undertaken to eliminate the coarse content of the silt"[85] And further, "as the dykes have proved entirely adequate to deal with the Yellow River for centuries, though attended with breaches from time to time due to lack of proper maintenance and watch of banks, dyke construction in Kosi must be proceeded with immediately even before the barrage is undertaken."[86]

They also wrote that, "The Yellow River is transporting satisfactorily much higher silt load than is found in the Kosi. The total silt content in Kosi may not, therefore, be expected to present any troublesome factor. Only coarse silt must be eliminated. The amount of the fine and the medium silt, even if it be in excess than at present can be easily carried by the Kosi water as is done by the Yellow River."[87]

The report written by these engineers was read out in parts in the Lok Sabha, in September 1954 and it was to assure the members that there was nothing to worry unnecessarily about the proposed embankments on the Kosi. Obviously, these experts were satisfied with the performance of the Hwang Ho embankments and they recommended embankments on the Kosi because the Kosi was never as dangerous a river as the Hwang Ho.

The truth, however, was that the Hwang Ho was neither able to discharge all its water very easily into the sea nor were its embankments safe or effective. When our experts were touring China, the Chinese Government and the people there were thinking entirely differently about their rivers and the embankments.

The Chinese Assessment of the Hwang Ho Embankments and Their Approach

The Chinese thinking of taming the Hwang Ho in the 1950s is recorded in a speech of the Deputy Premier of China, Teng Tse Hui, "But the extraordinary seriousness of floods in the Yellow River is not due only to the summer rains in the basin, but even more due to the silt deposited in the lower reaches of the river…The Yellow River brings down more silt than any other river in the world. If this amount of silt were used to build an embankment of a yard high and a yard wide, it would wind 23 times round the equator. In the lower reaches where the drop is gentler, this silt cannot fall into the sea but settles in large quantities. As a result the river bed has gradually risen higher and higher till the mean level of water between the river dykes is now higher than the surrounding country what we call an 'elevated river'. The channel of so muddy a river can hardly remain fixed. At the same time heavy deposits at the estuary also extend from year to year which not only makes this part of the river frequently change its course but makes the situation in the entire low reaches increasingly precarious. That explains why whenever there are exceptionally heavy floods, beyond the holding power of the dykes, serious calamities, inundation, breaches or even change of course occur in the lower reaches.

"According to historical records, there have been inundations and breaches on 1500 or more occasions on the lower reaches of the river and there were 26 important changes of course, nine of them major…..The terrible floods of 1933 caused more than 50 breaches of the dykes and brought disaster to more than 11,000sq. km. Over 3,640,000 people were affected and over 18,000 killed. Property worth some 230 million Yuans was lost. In 1938, Chiang Kai Shek Government opened the dykes on the south bank of the river at Huayuan Kou near Cheng Chow in Honan province. This led to a major change in the course of the river affecting 54,000 sq. km. with a population of 12,500,000 and 890,000 people died."

"….In a hundred years, from 1855 till 1955, the dykes had breached on 200 occasions. According to an on the spot survey in the river bed in lower reaches was found to be rising by one to ten centimeters every year in the middle of this century. In some cases the existing river bank was found even ten meters higher than the surrounding country level. Such rapid silting cannot be dealt with simply by piling up and reinforcing dykes. In a sense, higher and stronger the dykes, the quicker is the silt deposited because it has no way of getting out."[88]

The report called the embanking technique a primitive way of dealing with the floods and even ridiculed the legendary Chinese figure, Pan Chi Sun, who used to say, 'Hold the water between the dykes and flush the sand to the sea'. The Chinese were convinced that embanking the Hwang Ho meant walking into a trap where the dangers of inundation, breaching and course changes by the river were not going to spare them.

In fact, in 1952, the Chinese government had asked the USSR government for a group of Soviet experts to come to China to help draw up an overall plan for the Yellow River. A team of seven engineers headed by A.A.Koroliev arrived in Peking in January 1954. In April of that year, the Yellow River Planning Commission was formed and it came out with proposals to:

a) Regulate the flow through streams with the help of a series of dams on the tributaries of the main rivers for flood control.

b) Generate hydroelectric power making use of the head in the reservoirs.

c) Usefully exploit the stored water for irrigation and navigation.

While these plans were to be implemented, the Chinese proposed to take up extensive and long term programmes of soil and water conservation.

The Statement of Kanwar Sain and K.L.Rao

This was the Chinese line of action in 1954 to tackle floods in the Yellow River. When they were thinking and working actively towards taming the Yellow River with the help of large dams with a view to make it flow silt free, Kanwar Sain and K.L.Rao came back from China satisfied with the soundness of the Hwang Ho embankments and so also with that of the proposed Kosi embankments.

Kanwar Sain quoted Wang Hu Cheng, Chief of China's Water Conservancy, as saying, "The scheme (of 1953) seems to me very sound, provided you have measures to control silt."[89] As a matter of fact, there was no provision of any silt control measure in the 1953 scheme. In the absence of such a provision, the scheme was meaningless. In the same connection, he quoted two American engineers Maddock and Torpen who commented that, "The adopted plan has been devised after careful study by competent engineers

and the plan appears to be the best of several possibilities. At some unknown time in future, aggradations — the rise of river bed by accumulation of sediment, will make the levees impracticable. Supplementary measures will be required then." What the Americans forgot to mention was that in their own country, between 1833 and 1927, the embankments of the Mississippi river had to be raised 5.2m higher and yet there were frequent breaches and overtopping of the embankments.

In the 1912 floods, the Mississippi embankments were overtopped generally and breached at 300 places. They obliterated an aggregate 96km of embankments out of a total length of 1640km. Since 1882 there had been several devastating floods in the Mississippi basin despite and due to the embankments, like the ones in 1897 and 1903.[90]

Similarly a 1927 report said, "Mississippi River of the United States broke loose last year inundating an area of 51,200 sq. kilometer and damaging property to an estimated extent of two hundred million to a billion dollars. The breaches drove nearly three quarters of a million people from their homes and six hundred thousand of them were dependant on Red Cross. The wealth and power of the United States enabled much to be done for the sufferers, still they suffered, and what will be the final state of the inundated area is not known. Some landowners have returned to their properties and others, it is believed, fear to return on account of floods."[91]

The engineers in the Mississippi basin had to work hard to improve the discharge carrying capacity of the river to reduce the flood levels. Highly cost intensive and large scale dredging of the river had to be resorted to, to re-section the river, the cost of which only a country like the United States could afford. Thus the experiences of embanking rivers in China and the United States were not very encouraging, but there was no dearth of engineers from these countries to advocate the lost cause. The question is, what is the definition of the supplementary arrangement to control the silt? There are only two known options, one – to construct the Barahkshetra Dam on the Kosi and the other is to take up a massive afforestation programme in the geologically unstable Nepal hills. Both of them are of doubtful efficacy and their locations are in Nepal, so that India on its own cannot do anything in the matter without the former's consent. We will further discuss this issue in the succeeding chapters.

The silt load in the Kosi is the root cause of its vagaries and to say simply that if the Hwang Ho can transport its silt freely to the sea, there is no reason why the Kosi cannot do it is a gross over-simplification if not downright incorrect. The report was silent on how to separate coarse sand from silt, the time that would be taken to do it and the costs involved.

The experts eulogized the public cooperation in the river valley projects in China as they knew that Bharat Sevak Samaj, a voluntary organization, was formed by the Government of India in 1952 to undertake labour intensive works in river valley projects and that this initiative was to take off from the Kosi Project.

Siesmicity and the Barahkshetra Dam

Serious doubts were also expressed about the safety and security of the proposed Barahkshetra Dam in Nepal as it was to be located in an 'intensively active region' and, "… the possibility of an earthquake like that of Nepal-Bihar of 1934, much nearer to the dam site was not denied."[92] This earthquake (8.3 on the Richter scale) had hit Nepal/ Bihar on January 15, 1934 and devastated the towns of Muzaffarpur and Munger with a death toll of about 10,000. There was a vast change in the topography of Bihar because of this earthquake. Replying to a question on why embankments were being built on the Kosi instead of the Barahkshetra Dam, Anugrah Narayan Singh, while participating in a legislative debate, said, "This question was being reviewed for the past two to three years that a 700 feet dam on the Kosi be built and a lot of money was spent on this investigation. Then it was revealed that a 26 mile lake would be formed to store the Kosi water and that will prevent flooding. Besides, there will be many other small lakes created to store water. But, later it was thought that if this 700 feet dam bursts, then the stored water will wipe out whole of Bihar and Bengal and the entire area will be devastated"[93] Something very similar was said by N.V. Gadgil in the Lok Sabha on September 11, 1954, "I had, at one stage, to deal with the Kosi Project. When experiments were made in boring, it was found that the whole region was subject to earthquake attacks. Therefore, we have to consider whether a system of storage or some other system will do or what has happened in Algiers last week will happen again. There, because of the earthquakes, dams have either crashed or collapsed and dams have also completely gone out of existence."[94] These assertions swung the opinion against the Barahkshetra Dam and the proposal for embankments on the Kosi was legitimized.

To quell any dissent against the construction of the proposed Kosi embankments, an official North Bihar trip of Dr Rajendra Prasad, then President of India, was arranged during October 17-24, 1954 where he requested the public to participate in the *yagna* of nation-building, i.e., the construction of the Kosi embankments. One can only imagine the stress that the President must

have gone through advocating the construction of embankments, given his contrary views at the Patna Floods Conference of 1937.

Resistance to the Project Continued

In a last ditch effort to convince the Government of the futility of the embankments on the Kosi, Rai Bahadur A.G.Chatterji, a former Chief Engineer of the Bettiah Raj, at an official meeting held in Patna under the chairmanship of Shrikrishna Sinha, the Chief Minister of Bihar, on November 20, 1954 called the investments on the embankments as a waste of public money and that the scheme would not serve any purpose. This meeting was attended by the Chief Secretary, the Chief Engineer, the Relief Commissioner and Secretaries to various departments of the government and departmental heads. He once again reiterated that the real problem was of drainage congestion and not of floods and the solution lay in the construction of the reservoirs and re-sectioning of the drainage channels, i.e., streams and rivers.[95] By this time, however, there were no takers left for such ideas in the administrative set up of Bihar.

As mentioned earlier, over 300 villages were going to be trapped within the embankments and there was no policy or assurance from the government to look into their problems. The villagers were obviously opposed to the embankments. The miseries of the Kosi floods that the entire area was facing were now going to exclusively befall these hapless victims of the embankments. The embankments that were going to protect the villages located outside them, were going to guarantee floods to the villages trapped within them. A solution to this problem was also found out.

In the Conference Hall of the Patna Secretariat, while addressing a gathering of the workers of Bharat Sevak Samaj on December 2, 1954, a budding Congress leader from Saharsa who later headed many ministries at the centre, Lalit Narayan Mishra said that recent model tests at the Poona Laboratory had shown that only a 4 inches deep sheet of water would enter the villages that would fall within the two embankments if the flow of the water was 25,510 cubic meters per second (cumecs). The flood of 1954 had a maximum discharge of 21,260 cumecs only and hence the problem of rehabilitation was not very serious. The Central Minister for Planning, Gulzari Lal Nanda, was also present at this meeting.[96]

Confirmation of Mishra's views was later reported by the laboratories of the Central Board of Irrigation and Power in October 1956, "It was found that there is practically no rise in the water levels at these villages due to the construction of the embankments."[97] These findings later proved to be a very cruel joke on the embankment victims. Also, who influenced whom, is a curious question. Was it Lalit Narayan Mishra who influenced the Poona laboratory or was Mishra just giving some information that he had obtained from the laboratory? His statement received wide publicity through the media and its incredibility got drowned by his influence.

Dr. Shrikrishna Sinha laying the foundation of the western Kosi embankment at Bhutaha, 14th January 1955

Laying the Foundation Stone of the Kosi Project

The foundation stone of the Kosi Project was laid on January 14, 1955 amidst fanfare, jubilation and victory. Shrikrishna Sinha laid the foundation stone near Bhutaha village close to Nirmali, in Saharsa district with the chanting of *mantras* and shouting of slogans like '*Aadhi Roti Khayengein, Kosi Bandh Banaayengein*.' (We will eat only half a chapati but we will surely build the Kosi embankments). The foundation stone for the eastern embankment was laid by Dr. Rajendra Prasad on March 22, 1955 near Bairia village close to Supaul. On the other hand, however, for nearly 200,000 people, who were likely to be trapped within the embankments there was frustration, heartburning and apprehension. They were agitating under the leadership of Parmeshwar Kunwar, Bahadur Khan Sharma, Kaushlendra Narayan Singh, Jaidev Salhaita, Bauku Mahato and Jageshwar Jha among others.

First Five Year Plan Recommendations of the Government of India

While the plans for the Kosi were making their journey from Barahkshetra to Belka Dam settling finally for the embankment on the river; large dams – the 'temples of modern India' were ruling the scene at the national level. This was amply emphasized in the First Plan document of the Government of India.

Although not much was said about flood control in that document, the intentions were very clear therein. It said that floods caused heavy damages in different parts of the country. Proper statistical records were not kept till then and whenever floods occurred in major rivers, inquiry committees were constituted to look into them and sometimes, appropriate local actions were taken to control floods. Huge lengths of embankments had existed in the states of Assam, Bihar, West Bengal and Orissa. The document suggested that storage of water with the help of large reservoirs was the best solution to solve the flood problem.[98]

This was the time when construction work on the dams of the Damodar Valley Corporation (DVC), Bhakra, Hirakud, and Nagarjunasagar, etc. had started but the proposed Kosi High Dam at Barahkshetra, which could benefit Bihar, fell from grace for various reasons. Bihar did not gain anything from the DVC dams although it contributed financially to their construction, lost its land in submergence, suffered displacement of a good number of its people besides uprooting of many of its villages. The Kosi sufferers of Bihar were shown many dreams by the powers that be but they had to be content with embankments on the river as veteran engineers like Kanwar Sain, Venkata Krishna Aiyer, M.P. Matharani and N.K.Bose had tilted the balance in favour of embankments and whatever hopes there were about the dam at Barahkshetra were all buried after the recommendations of the China visit by Kanwar Sain and Dr K.L.Rao were given to the Government of India. There was an expediency to control floods in the post-colonial era and nothing other than the embankments could be built in that rush. The experts left an escape clause for themselves when they said that the embankments were being built only as a stop gap arrangement and that the final solution to the flood problem actually lay, in the construction of a high dam at Barahkshetra.

Foundation stone of the Kosi Project

The First Flood Control Policy of the Government of India

The Government of India came out with its flood control policy on September 3, 1954. A statement to that effect was read by Gulzari Lal Nanda in the Lok Sabha and this was the first document of its kind in independent India as the nationwide floods of 1953 and 1954 had created a precarious situation in the country. Nanda told the Parliament that safety of the people in the flood affected areas was so important that one had to choose means that could be employed immediately and he suggested a policy that was to be implemented in three stages:

a) **Immediate:** The immediate phase was to extend over a period of two years. It was to be devoted to intensive investigations and collection of data. Comprehensive plans were also to be drawn up and designs and estimates prepared for short term measures of flood protection. Some measures, such as revetments, construction of spurs and even embankments were proposed to be applied immediately in selected sites.

b) **Short Term:** During the second phase, which was to start with the second year and would extend to the sixth or the seventh year, flood protection measures such as embankments and channel improvements were proposed to be undertaken. These measures could offer protection to a major portion of the then flood-prone areas.

c) **Long Term:** The third phase was related to long term measures such as the construction of storage reservoirs on tributaries of certain rivers and additional embankments, whenever necessary. These could take another three to five years.

Nanda also felt that a complete answer to the problems of floods may not be found in a single measure. Each case would be of a combination of measures adopted if a proper solution was to be found.[99]

Thus, it was proposed to complete all the immediate and short term measures within seven years. This was too optimistic a proposal and N.V.Gadgil commented once again on Nanda's statement. He said, "I do not share the optimism of my friend Mr.Nanda, who says he will be able to tackle the flood problems in seven years. I shall certainly congratulate him, if we both live, at the end of fourteen years that we have substantially done it."[100]

It was therefore expected that floods could be effectively controlled in 14 to 15 years to come starting 1954. The central and state governments did commendable work in collecting data besides working on many embankments, channel improvements and town protection as they pursued the flood policy. But within two years of the promulgation of this Flood Control Policy of 1954, the statement that Nanda gave in the Parliament on July 27, 1956 was humbler and more practical. He said, "I may point out humbly that while a progressively increasing measure of protection from floods would be achieved each year, we cannot expect for years to come to be in a fortunate position of being absolutely immune from flood risks. We shall have to learn to live with floods to an extent."[101]

The Flood Control Policy of 1954 bid goodbye to the debate that had been going on for the previous 100 years. The embankments that were an object of ridicule till now found a central place as far as flood control was concerned. Floods were a necessity and farmers welcomed them. The need was to drain this flood water as early as possible but what was being proposed meant that the floods would not be allowed to come. They would be excluded from the country either by building embankments or high dams.

Evaluation of the Kosi Scheme (1953) by Claude Inglis

After the start of the construction of the Kosi embankments, Sir Claude Inglis was invited by the Government of India in February 1956 for consultations over the Kosi Plans. His comments regarding the scheme raked a lot of controversy when he said that the embankments might give way in future and that the reservoir behind the barrage would be filled up in seven and half years. Kanwar Sain had to clarify the situation saying, "Actually most of the coarser material in movement during floods will get deposited at the upstream end of the pond and year by year the area where deposition is occurring will progress further and further upstream towards the gorge…so that the material which will be trapped will far exceed the pond capacity. Thus the silt control life of the pond even according to Sir Claude, will be much longer." He further said that, "The height of the barrage has been fixed carefully so that it will exercise effective sediment control for, at least, twenty years. This period will give us the breathing space, having relieved (a) large tract of the basin from flood threats and will enable us to collect and analyze systematically further data, continue research in the field and the laboratory and determine the effect of coarse sand on river behaviour. Soil conservation measures will be carried out and detention reservoirs on tributaries will be investigated. Most important of all, the effect of the reduced silt on the river channel, as a result of silt being held back by the barrage will clearly manifest itself. This additional knowledge then will help us to devise means to further tame the river on a long term basis." He continued,

"Essentially, in tackling the problem of the Kosi, it has to be a choice between the demand of the people for immediate flood protection and evolving a plan of flood control that can be guaranteed cent per cent flawless. If the plans for control of Kosi are to be held in abeyance until an absolutely trouble free solution can be found we may be certain no work will be done on Kosi for a long time to come."[102] Kanwar Sain said this in 1956 but he was merely repeating what Gulzari Lal Nanda had already said on the September 11, 1954. He also further lauded the maintenance of the embankments along the Rio Grande in the USA. He felt that the American achievement could be repeated in India and maintained that there was no need to be unnecessarily worried about the embankments along the Kosi.

This statement of Kanwar Sain was public and published in the newspapers. Obviously, the 1953 scheme of the Kosi was an ad hoc plan to tackle floods and was meant to buy time for a long term plan to be designed and implemented. This point had been, in fact, clarified much earlier by the administrator of the project, T.P. Singh (1954) when he said, "The planners of this project have nowhere stated that only this scheme can fully solve the flood problems of the Kosi. The fact is that they also have emphasized the need for further investigations on the Kosi."[103]

On another occasion, on September 6, 1956, while addressing a meeting of the Institution of Engineers held at Patna Science College, Kanwar Sain said that in the original plan to tame the Kosi, a 244m high concrete dam was proposed which could reduce a discharge of 25,500cumecs to 8,500cumecs. According to the preliminary estimates such a dam would cost Rs 74 to 80cr and could be completed in a period of 12 to 15 years. Since the people could not be expected to wait for 15 long years a decision had been taken to do something immediately and thus this proposal to make a barrage and embank the river was taken. [104] Roughly around the same time, Sir Claude Inglis had something different to say. He said that from conversations with those engaged on the river it was found that there was widespread apprehension that the high embankments, many miles of which had already been constructed, would lead to a marked rise in the water levels within them, thus necessitating the resettlement of the villages in that area. That a large rise in the water level would take place between the embankments was, he agreed undoubted, because they would restrict the spill and the width of flow. This in turn, would lead to the deposition of sand between the embankments, so that unless the charge of the sand coming down the river could be greatly reduced, the embankments would breach. In any case the problem was not how to reduce the flood discharge but how to reduce the quantity of sand.[105]

2.11 Report of the High Level Committee on Floods (Nag Committee), 1957 and the Termination of the Flood Debate

At the Patna Flood Conference (1937), there were representatives from the United Provinces (U.P.), West Bengal and other states. The consensus was against the construction of embankments.

A Superintending Engineer from U.P., Bradshaw Smith, while talking about the Ghaghra embankments at the conference said, "Technical opinion in the United Provinces is also opposed to the confining of the river by bundhs on each side over a distance such as 80 kilometers partly for reasons stated by Capt. Hall, and partly on account of the difficulty of disposing of drainage water denied entrance to the river by the bundh itself."[106] Similarly, an engineer from Assam, Peter Salberg, whose statement was read from his book, described more clearly how human interference started and developed, how the situation grew progressively worse owing to the power of governments and skills of engineers and how substantial obstructions had sprung up everywhere with the completion of embankments, roads and the railways.[107] Similarly in West Bengal, the people were feeling the assault of aggravated floods because of the embankments, roads, railway lines and other such impediments. Rai Bahadur G.C. Chatterji (1936) wrote, "In this unholy combination are included the Irrigation Department putting up scheduled embankments with insufficient sluices, the zamindars putting up numerous embankments all over the place without any sluice, the District Boards making roads across the spill area and railway companies constructing lines, not providing sufficient passage to pass through."[108]

All these statements were made about ten years before India's independence. Ten years after independence, the High Level Committee on Floods (1957) constituted under the chairmanship of an eminent engineer, Balwant Singh Nag, reached conclusions that were exactly opposite to the engineering consensus that had existed from 1850 to 1952. The Committee noted that: [109]

a) For the past few decades the Bengal engineers had expressed themselves against embankments, but this hostility to embankments had been somewhat modified in recent years.

b) About the findings of the Orissa Flood Committee (1928) the report said, "It might be mentioned here that on the Mississippi the 1927 floods proved disastrous and that was attributed by people to

double embanking of the river. This, perhaps, had influenced opinion in India as in certain other countries."

c) "In the twenties and thirties of the present century opinion in Bihar was also against the embankments. This appears to have been an echo of the opinion so forcefully expressed by Bengal engineers against the construction of embankments."

d) "During the present decade, however, opinion in UP also had gradually been changing in favour of construction of embankments and a number of these have recently been constructed."

e) "In Assam, Shri S.C. Majumdar…stated that further embankments should on no account be made…Subsequent opinion in Assam has not been the same as that expressed by Shri Majumdar. During the last four years there has been great activity in the state in building embankments and now there are nearly 2,240 kilometers embankment in the state…"

2.12 Complete Reversal of Engineering Opinion

We have cited the examples of only five states because these states are the most flood prone states in the country. The experts' conclusions expressed in 1957 are exactly opposite to the engineering consensus in the 1930s. The change in the experts' consensus would have been justified had it been based on data, experience or analysis. But as shown here, it was more a response to political expediency. Under the circumstances, how does one justify that technical matters should be left to engineers alone and the non-technical people should not interfere unnecessarily in their affairs?

The fact is that the British Government did not want to tread into the embankment trap for fear of paying compensations or, at least, paying for the cost of relief and rehabilitation in the case of a breach in the embankments. Calculating as they were, they knew that if the embankments remained in position for nine years and breached in the tenth, it would offset all the benefits accrued over the earlier nine years and hence the administration did not want to construct embankments and their engineers spoke the appropriate language. But in independent India, the politicians had a political compulsion to do something and do it immediately and hence they did not mind constructing embankments. This was the reason, probably, that the engineers preferred to go along with the politicians and their interests and sacrificed their right to express any independent opinion. On technical matters their opinion should have been the final word but that position was abandoned to the politicians.

There is surely a grain of truth in these inferences otherwise it is difficult to explain the 'decision making process' or the 'evolution of engineering consensus' regarding flood control in Bihar. The experience of the embankments built in China and the United States was never a happy one. Entirely contrary to expectations, breaches in them were almost an annual ritual causing immense hardships to the people there and, yet, what was the experts' opinion about these structures? Kanwar Sain and K.L.Rao have written in their China report that the people are subject to minor inconveniences after an interval of 12 to 15 years. If the killing of 18,000 or 890,000 persons is a minor inconvenience, what will be a major catastrophe? How many people need to die before our experts are convinced that something very unusual has happened? It is a result of technical shortsightedness that our flood control schemes are nowhere near their stated objectives and the situation is worsening day by day.

As far as the findings of the High Level Committee on Floods are concerned, it terminated all the debate on floods in this country. Thereafter the politicians and the engineers had a field day as no scheme had to go through any scrutiny or a debate amongst the people for whose benefits the schemes were being undertaken. Once the embankments on the Kosi were approved, within just two years, by 1956, 770km long embankments had come up along the Ghaghra, the Burhi Gandak, the Bagmati, the Kamla Balan, the Adhwara and the Khiroi river. Nobody then had the time to look into the impediments in the flow path of rainwater or the possible waterlogging along the embankments.

An Ostrich-like Approach to Flood Control

When India adopted the First Flood Policy, embankments along the rivers in Bihar were only 160km long and the flood-prone area was limited to 2.5Mha. In 1992 the embankments' length in the state rose to 3465km, to partially protect about 2.9Mha of land from flooding. In the meanwhile the flood-prone area of the state rose to 4.3Mha in 1971, 6.46Mha in 1982, and 6.88Mha in 1994. This rise was was in tune with the rise in the embankments' length in the state whereas the flood-prone area of the state should have been reduced.

Nearly 11km were washed away by 1994. After the partition of the state into Bihar and Jharkhand, in 2000, some 24km long embankments were located in Jharkhand. At present Bihar has only 3,430km of embankments.[110] Surprisingly, the reported flood-prone area of the state remains 6.88 Mha despite the erosion of the embankments and so does the flood protected area of the state which stays at 2.9Mha. Such anomalies

are not restricted to Bihar alone, it is happening at the national level also. In the 1960s, the flood-prone area of the country was 25Mha. It rose to 40Mha towards the end of the Eighth Five Year Plan which was 1.6 times that of the 1960s. In Bihar, the increase was nearly three times. The state had spent Rs 1327cr till the end of the Plan period of 2002.[111] In the subsequent years, from 2002-03, 2003-04, 2004-05, 2005-06, 2006-07 and 2007-08 the Government of Bihar spent Rs 72.63cr, Rs. 55.45cr, Rs. 85.31cr, Rs. 106.60cr, Rs.129.91cr and 254.59cr respectively on floods control. Thus, the state has spent Rs. 2031.49cr on flood control till March 2008.

As feared, the embankments are breaching now. From Ghaghra in the west to the Mahananda in the east, the rivers overtop the embankments on an annual basis and the damage to life and property continues unabated. The embankments of the Kosi have breached in 1963 (Dalwa), 1968 (Jamalpur), 1971 (Bhatania), 1981 (Bahuarwa), 1984 (Hempur) and 1987 (Samani and Ghonghepur) and at Joginia in 1991. In 1987, there was an unprecedented flood in the state and the embankments breached at 104 points. This flood destroyed 1.7 million houses in the state, killed over 1400 people and damaged crops valued at Rs. 680cr.[112] At many places people themselves cut embankments for various reasons and unless there is a drought like the ones experienced in 1972 or 1992, there is no respite from the floods. Gulzari Lal Nanda is not there amidst us today but had he been alive one could have asked him about his vision of successively reducing floods and the plight of the people.

Janata Dal and Rashtriya Janata Dal governments ruled the state from 1990 till 2005. During this period some 11km of embankments were added while a similar length was washed away for a net gain of zero, even as billions of rupees were spent on repairs of the embankments alone. When the Janata Dal government took charge in 1990 there was some indication of a fresh approach, other than embankments, as far as flood control was concerned. The Water Resources Minister of the state publicly denounced embankments and held them responsible for the worsening flood situation in the state. He also promised to plug all the holes through which money meant for flood control used to leak. He went a step ahead and said that no embankments would be left to breach during his regime and should that happen, he would resign his post. The embankments did not follow his directive and within a month of his assertion the Kosi embankment breached at Joginia, near Bhardah, in Nepal on July 18, 1991. The responsibility for maintaining the embankments in this region is also vested in the Water Resources Department of Bihar. The matter was discussed in the Bihar Vidhan Sabha and the members, including his own party men, demanded his resignation. He submitted his resignation but it was not accepted. (See further discussion of this incident in Chapter 4.)

This incident at Joginia set a new trend that whenever an embankment breached, the government would issue a statement that the embankment had not breached, it was cut by anti-social elements. Anti-social elements were booked for seven breaches in the Bagmati embankments in 1993 and so was the case with the Sohrai breach of the Kamla, near Jhanjharpur (Madhubani district) that year. The breach victims at Sohrai had to prove that the breach had in fact taken place so that they could get some dole from the state. In 1995 there were breaches in the Gandak, Bagmati, Kamla-Balan, and the Adhwara embankments but the real tragedy occurred in the Chandan and the Badua dams that engulfed the districts of Bhagalpur, Banka, Sahebganj and Godda, located south of the Ganga. Sahebganj and Godda are now in Jharkhand but the remaining two districts occupy a permanent position on the flood map of Bihar.

2.13 The Art of Escaping Responsibility

There is an additional story of the *Zamindari* and *Maharaji* embankments that were built by *Zamindars* and *Maharajas.* With the abolition of *Zamindari,* these embankments came under the Revenue Department of the government. They remained in a state of disrepair because the Revenue Department had neither the resources nor the intentions or the manpower to keep them in a good state. They used to breach at various locations during the rainy season to the detriment of the people living nearby. While the Revenue Department of the state observed a curious silence over the failure of these embankments, the Water Resources Department used to shed all its responsibility as, technically, the embankments did not belong to them. The flood victims were the ultimate losers. That happened till 2006.

In 1998, the leader of the opposition in the Vidhan Sabha, Sushil Kumar Modi, raised the issue of 125 breaches in the embankments along the rivers in the state and sat in protest at the Ghantaghar Chowk in Darbhanga against the apathetic attitude of the government to the plight of the people. The government explained its position through a press release, saying that, "Because of the attack of strong currents of rivers on the embankments, only seven breaches have occurred in the embankments of the Irrigation Department and at seven to eight places, the farmers have cut the embankments to fill their fields, draining the water into the river or for clearing the waterlogging. Breaching of the embankments at 125 points is baseless. Also, to charge the state government that because of

the breaches in the embankments of the Irrigation Department, north Bihar is facing floods, is far from the truth. The Irrigation Department only has responsibility for protecting 2.9Mha of land and is in no way responsible for the Maharaji and Zamindari embankments, ahars or pynes."[113]

The press release did not elaborate if the Water Resources Department of the state was not responsible for the breaches then who was accountable for that. Some 32 years prior to this incident, on September 14, 1966 the same issue was debated in the Bihar Vidhan Sabha and Purnendu Narayan Singh MLA had charged the government of a similar lapse. He said, "The Irrigation and Power Minister has said that he is responsible only for 27 to 36 per cent breaches in the embankments and not for the rest. He holds the departments of Revenue, Agriculture, River Valley and Irrigation responsible for these breaches. Thus there is no coordination. This is not the right thing. One department of the government passes the buck to the other and this will not work. There should be a separate department for this. All the works related to flood control should be the responsibility of this department." [114] Obviously, the governments are woefully lethargic. It takes generations to sort out such trivial matters and the treasury and opposition benches of the legislature continue to bargain over the miseries of the people. This has been going on for the past 40 years in Bihar as far as embankments are concerned.

It goes to the credit of the NDA government of Chief Minister Nitish Kumar to have taken initiative in 2006 to transfer the responsibility for the maintenance of the *zamindari* and *maharaji* embankments to the department of Water Resources alone. Only time will tell how serious the flood control establishment of the state is about this change.

Breaching of embankments should never have been a bargaining point between various political groups. It should be a common concern but, unfortunately, it is not. When *zamindari* was abolished, the government should have taken over all its liabilities as it could not turn away from its responsibilities. If these embankments belonged to the Revenue Department, why was that not told to the people before the rains? And why were the people not informed who had to be contacted in case of an emergency? Will the government of Bihar reveal who is responsible for the floods that strike the remaining part of the 6.88Mha, i.e., another 4.0Mha? Does the government mean to say that the people living on those 4.0Mha should fend for themselves and the Water Resources Department of the state is not responsible? Will it also identify the areas where it does not assume any responsibility? Will the government compensate for any losses that occur on those 2.9Mha which it says it is responsible for? The simple answer is that nothing of that sort is going to happen. Governments have their own style of functioning and they are not bothered about what people say or think.

The Water Resources Minister of the state in the earlier RJD regime kept on arguing from public platforms that the embankments along the rivers served no good purpose and he derived satisfaction that at least his government did not participate in the process. On the other hand, the annual reports of his department have been telling a different story altogether. "The state has 3465km length of embankments that provide flood protection to about 2.928Mha of land. Ten embankment schemes are under construction and their proposed length is 872.74km and the area to be benefited is 636,560ha. Only 556.69km of this has been constructed that provides partial protection to 318,110ha. Resource crunch is affecting further progress."[115]

It is difficult to say which information should be believed, the one which the minister gave from public platforms or the one which his department reported. In fact, it suited the RJD government to blame the embankments for the deteriorating flood situation in the state. There were two benefits for it. One, the embankments and not the government was held responsible for floods in the state. Two, since these embankments were built when a different party ruled the state, the onus of floods ought to fall on it. Thus all the governments proceed to commit the same mistakes on flood control which their predecessors have made and failed. This is a very safe approach because, by the time the results of the present day works manifest themselves the whole team of politicians, engineers and contractors changes and someone else has to reply to the charges.

2.14 From Embankments to High Dams and River linking

Officially, the government of Bihar believes that floods in the state can only be controlled when dams are built on these streams, in Nepal, where they disgorge into the plains. One often hears about the Barahkshetra Dam on the Kosi, Nunthar dam on the Bagmati and the Chisapani dam on the Kamla. Similar proposals are made about the Ghaghra, Gandak and the Mahananda. For sometime now, interlinking of Indian rivers is gaining currency as a method to reduce or eliminate floods in north India. This aspect of flood control is discussed in Chapter 10.

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3

Opinion Polls Decide Embankments' Alignments

Once the construction work on the Kosi embankments and the barrage connecting Bhardah to Bhim Nagar started, tremendous enthusiasm was generated among the masses who were likely to be protected against floods. The project kindled great hopes in them. At the same time, those who were likely to get trapped within them were disheartened. In the last chapter, we studied the reasons that led to such a situation. In the following paragraphs we will assess the situation that followed after physical work started on the Kosi embankments.

3.1 Political Embankments

In January 1955, the Bihar government published detailed maps of the proposed embankments in newspapers, for the general information of the public. The eastern embankment alignment was detailed from Bhimnagar to Supaul (Fig.3.1) and the western embankment was detailed between Kunauli and Ghoghardiha (Fig.3.2) in these drawings. The construction work first started in the Kunauli-Nirmali reach in the Indian portion and beyond Kunauli in Nepal. This was followed by the construction process in the Bhimnagar-Supaul reach on the eastern side. These maps carried a note that the final alignment of the embankment would be decided in consultation with the local population. There was, however, no such consultation with the people when the proposed alignment was fixed and enough flexibility existed in deciding the spacing between the two embankments. It is also not incorrect to conclude that the design of the embankments was done in bits and pieces; otherwise a full-length map of the embankments could have been published right at the beginning.

A cursory look at Fig.3.2 suggests that the western embankment had to run straight between Bhutaha and Ghoghardiha. Many villages that are flooded by the Bhutahi Balan these days, were to be located within the Kosi embankments. But there was a row over the alignment of the western embankment from Kisunipatti to Madhepur (Fig.3.3) and this had to be changed in view of the 'popular demand' of the public. This was followed by a battle of wits and sometimes real battles too, between the people and the 'people's government', till the construction of the western embankment finally ended at Ghonghepur. The 'as constructed' alignment of the embankment (See Figs. 3.4 and 3.5) when imposed on these figures gives a fair idea of the tampering with the planned embankments in various reaches. Apart from 'popular demand,' this tampering was also done under the influence of political leaders, which speaks volumes about the manipulation of engineering skills, technology, and the engineering community as a whole.

The as proposed and as constructed drawings of Figs. 3.4 and 3.5 clearly indicate the altering of the alignment. As one moves south of Kisunipatti (Fig.3.5), the spacing between the eastern and the western embankment of the river goes on reducing while common sense suggests that as a river moves on, many streams and tributaries join it leading to an increase in the flow and the cross section of the river. To accommodate such flows, the spacing between the two embankments should increase. But the actual spacing shrank as shown in the maps. All these changes did not happen only on 'popular demand'. There was undue interference by politicians and technology must have been thrown to the winds. It is clear that either the spacing between the embankments was very carelessly designed or enough margins were deliberately left to reduce the waterway and the spacing between the embankments. Engineers must have been under duress to yield to unjust political demands for changing the alignment, or else, they thought it wise not to turn down such or orders.

Embankments Become Baandh

'Baandh' is a word that is commonly used for a dam, an embankment, a weir or even a barrage. The common people of Bihar cannot differentiate between these structures as they are all addressed by the same term, 'baandh'. This may be true for people living in other places too as only a very small section of the society can differentiate between these structures. When the Kosi embankments were proposed the term in currency was 'Kosi Baandh', which was interpreted

Fig 3.1 Proposed Alignment of the Eastern Embankment of the Kosi (January 1955)
Not to Scale

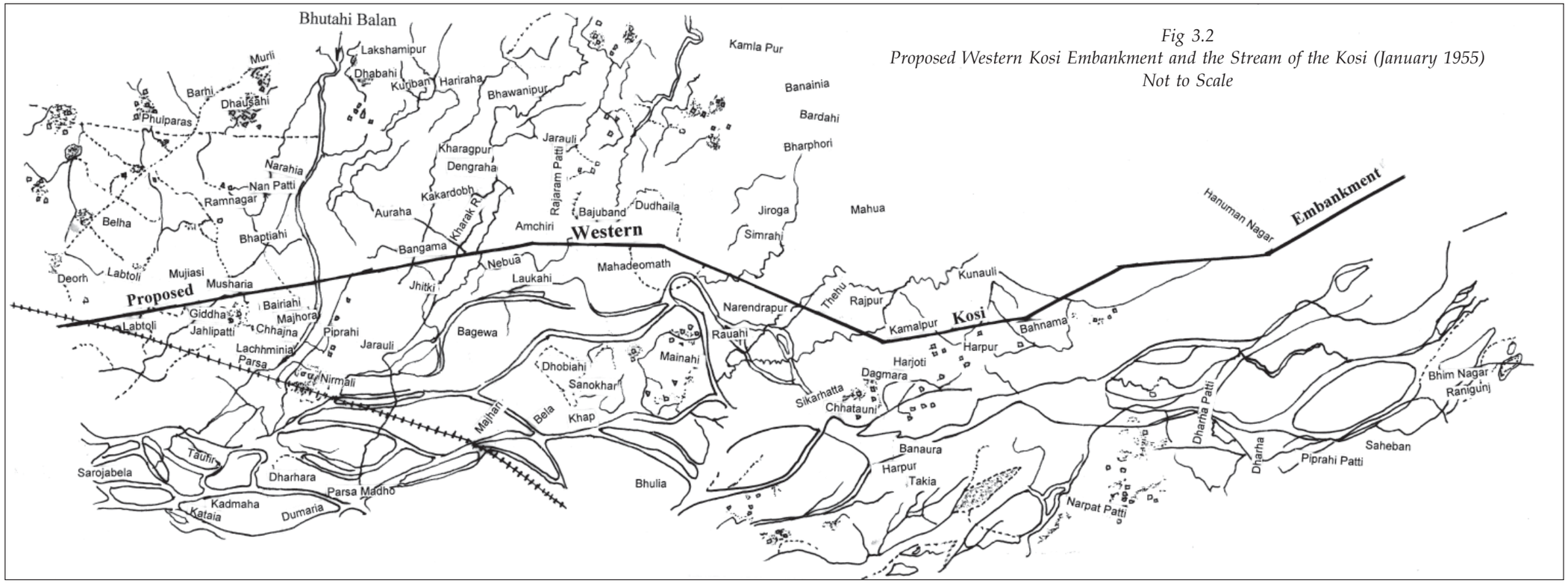
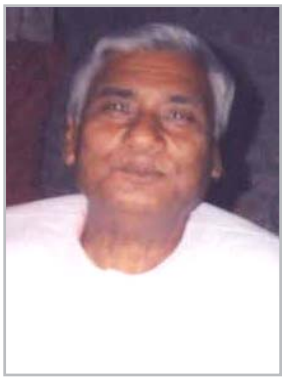


Fig 3.2
Proposed Western Kosi Embankment and the Stream of the Kosi (January 1955)
Not to Scale

differently by different stakeholders.

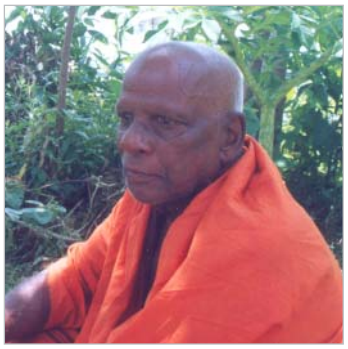
The engineers, however, knew what they were going to build. Those who had attended the Nirmali Conference in 1947 thought that the government was going to build the Barahkshetra dam in Nepal. Narayan Prasad Yadav (65), of Govindpur village in Supaul district explained the common person's perceptions of the Kosi baandh, "As news spread that the Government was going to build a 'baandh' on the Kosi, the common understanding was that, since the river ran north to south the 'baandh' would be aligned east to west, across the flow of the river. This is what a farmer does to block, divert or drain the water from his fields. He never does anything along the direction of the flow. This was our understanding of the project. When the construction of the 'baandh' started, we saw something very strange happening along the river and our village and homes were all going to be trapped within the 'baandh.' This alerted us and we all struggled to stay on the countryside of the embankment. Now, the location of the village was fixed, it could not be moved but the alignment of the 'baandh' could. That is precisely what happened here. Everybody wanted to stay outside the 'baandh' but only those who were powerful enough those days, succeeded. You know very well, who was powerful those days."[1]



Naryan Prasad Yadav

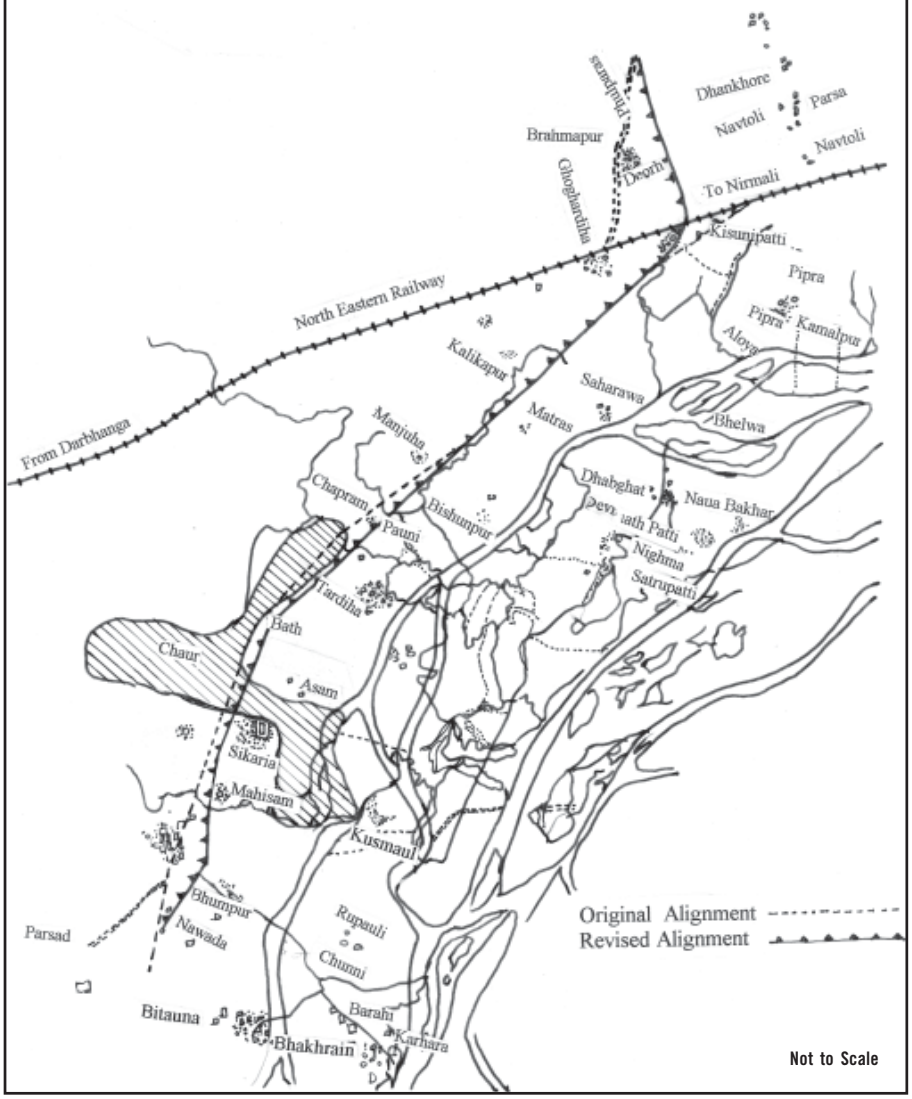
It appears that the alignment of the western embankment between Kunauli and Nirmali was changed without much resistance from the Kosi Project engineers because few reports of conflicts over the issue are available in this zone. The real difference of opinion manifested itself in the stretch south of Nirmali. It is worth studying. On the eastern side it seems that the changes were mainly south of Supaul. They took place without much struggle. Bangaon and Mahishi, for example, were to be located within the embankments. Both these villages of influential people managed to remain outside the eastern embankment.

Tul Mohan Ram, a former member of the Lok Sabha and a resident of Sarauni village in Saharsa district, says, "This embankment was a political embankment right from the beginning. Our basic problem is how to control sediments. The dam at Barahkshetra or the one at Belka could hold the silt for sometime only. When



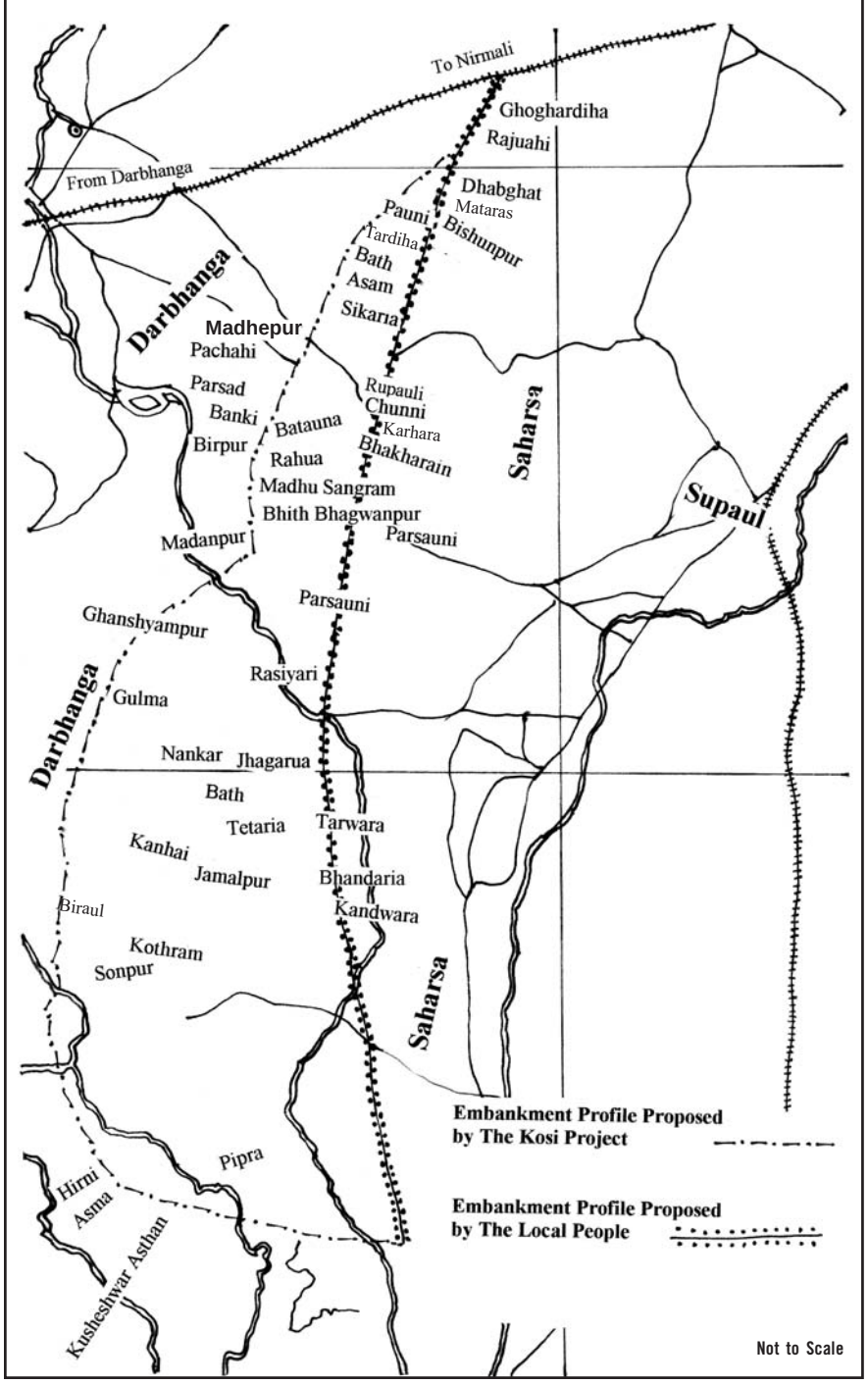
Tulmohan Ram

Fig. 3.3 : First alignment of Western Kosi Embankment and the changes suggested by the Kosi Project



the *Belka* Dam was proposed to Jawahar Lal Nehru, he categorically turned it down saying that the government had no money to build such dams. The proposal was then going to be shelved. Local leaders of the Kosi basin had no direct access to Nehru but hung around Gulzari Lal Nanda and through him they made inroads to Nehru. That is how this 25 years scheme of embankments came into being. Mischief was played with the findings of the Poona Laboratory. Imagine, the spacing between the embankments at Ghoghardiha is 16km and the place where you are sitting here, in Sarauni, many a kilometers down south, is only 9km whereas it should have been more than 16km. The western embankment had a proposed spread up to Aasi near Biraul in Darbhanga district while the eastern embankment was supposed to have passed through Bangaon in Saharsa. Both these villages are now located on the countryside of the embankments. A lot of politics was played over the alignment of the embankment. All the villages that were located inside the embankments wanted to come out of the embankments otherwise the Kosi would thoroughly maul them during the flood season. Then a deal was struck. Give us votes and we will take you out of the embankments. The leaders also openly played the caste game. Aasi, Kanhai and Gandaul, etc. are all brahmin villages and they managed to come outside the embankments. It is altogether a different story that their villages are completely waterlogged now, but they achieved what they wanted then."[2]

Fig. 3.4 : Western Kosi Embankment as proposed by local people



Lost Voices in the Development Din

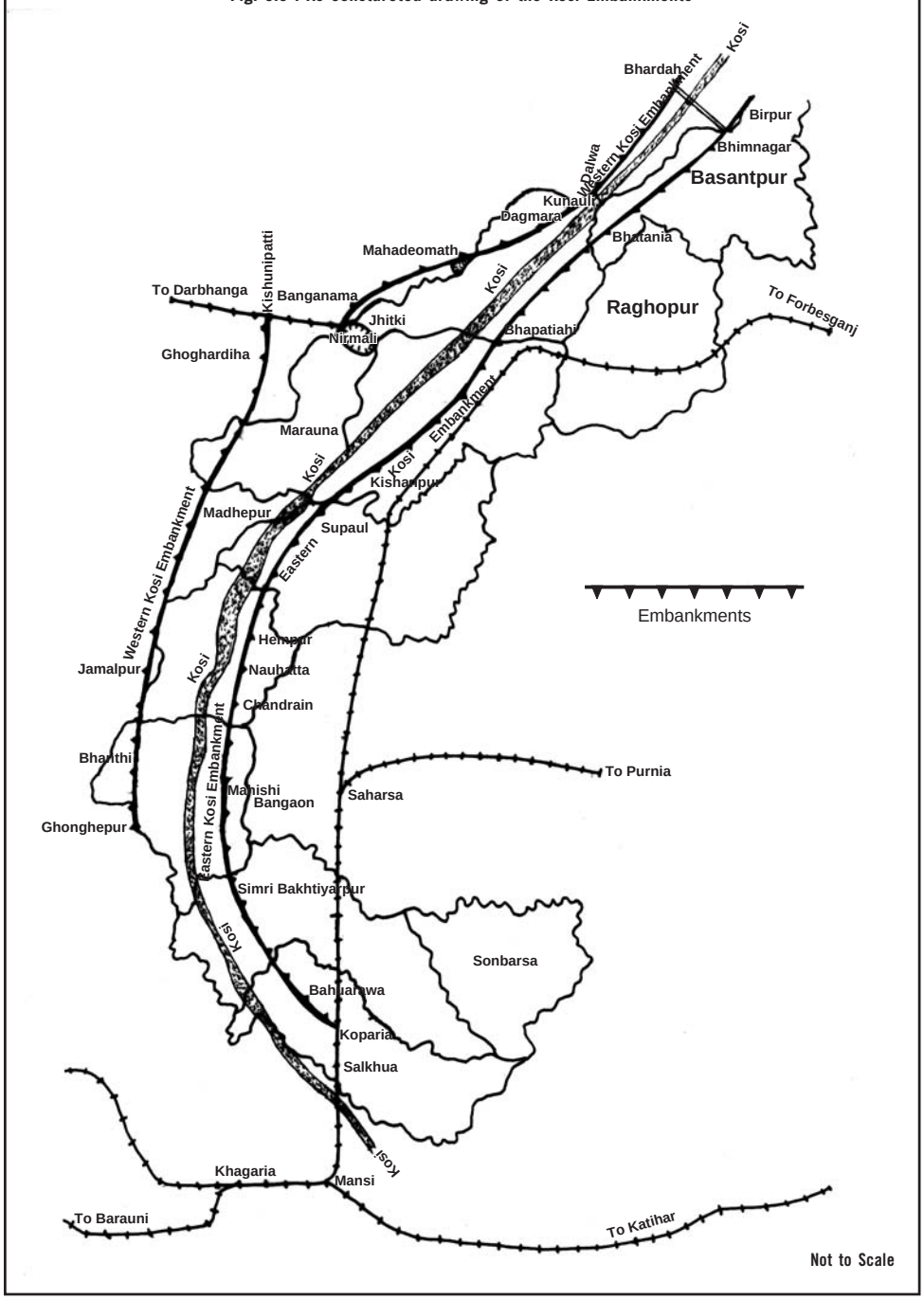
While the people who were likely to be protected against the onslaught of the river were rejoicing, those farmers whose lands were likely to fall within the alignment of the embankments or were acquired by the government, were running from pillar to post for compensation. They were shuttling between various offices in the hope of getting some money but had to be contended with promises alone. The state government assured them that all their dues would be cleared before March 31, 1955. Lalit Narayan Mishra issued a statement to that affect at a meeting in Supaul on January 14, 1955.[3] But that was never to be. This deadline was extended to April 15, 1955 but that was very strongly objected to by veteran Sarvoday leader Jay Prakash Narayan who said that farmers could not plan their agricultural

operations in the absence of resources.[4] There was chaos all over as the alignment of the embankments was not fixed. As a result, nobody knew who would be compensated and who would not be compensated.

3.2 Nobody wants to Live within the Embankments

The problem arose when construction started south of Pauni, in Ghoghardiha block. A movement of sorts started on the western embankment near Madhepur (now Madhubani district) towards the end of 1955. The original alignment of the western embankment was to pass through Mataras, Madhepur and Jhamta while the local people wanted it to pass through Mataras, Karahara and Jhamta (Fig. 3-4). The people's plea was that the alignment proposed by them was shorter in length, it would be less costly to build and lesser number of villages will be located inside the embankment. And, lastly, they reminded the administration of the assurance given in 1954 by Dr Rajendra Prasad, the President of India, that the government would try to save every village possible from falling within the embankments.

Fig. 3.5 : As consturcted drawing of the Kosi Embankments



Kicking Around People and the Embankments Alignments

There were sit-in strikes, processions, protest marches and *satyagrahas* all along the western Kosi embankment for changing the alignment below Mataras. The situation became very tense and explosive in January and February 1956. The protesters mounted pressure on the administration to stick to the original drawings. A delegation of the protesters met the Administrator and the Chief Engineer of the Kosi Project at Patna on January 24, 1956 with all their papers. At this meeting they were told that all the waters of the Kosi would pass only between the two embankments of the Kosi. Many protesters had hoped till then that the river water would be distributed through many channels and spread over a large area. One of the delegate members told the Administrator that if the river water was not dispersed at the barrage site and was allowed to flow only within the embankments, the flood situation near the western embankment would worsen and the villagers close to the western embankment would

be drowned. The land between the embankments was not plain, but was undulating. With the slope towards the proposed western embankment, the flood- waters would submerge that area first and only the surplus would spill towards the eastern embankment.[5] A similar thing was reported to have been said about the field slopes by Sir Claude Inglis in 1941 in his report and the engineers must have been aware of the ground conditions. The officials, however, had no reply to these observations of the villagers. They had a set answer that whatever was being done was on the advice of experts and their opinion was supreme.[6] The government had the certificate of the Poona Laboratory to that affect.[7]

The government clarified its position through a press release, dated March13, 1956 which said, "Attempts were made to shift the alignment of the embankment to the extent possible, towards east and still two thickly populated villages, Mataras and Tardiha could not be brought outside the embankments. The state government, at the request of some petitioners, asked the Administrator of the Kosi Project to get a review of the alignment done. He inspected the site and reiterated that no change was possible. If the embankment alignment is pushed further towards east, it will get very close to the live channels of the Kosi and its survival would be at stake."[8]

Lalit Narayan Mishra was trying to calm people down and encourage them through the Bharat Sevak Samaj to make sacrifices in the name of nation-building. "People in the Kosi belt, like any other place, are always ready to spill blood for every inch of land. The farmers of the area initially refused to give their lands and threatened bloodshed if the lands were forcibly taken away. But the workers of Bharat Sevak Samaj …did not lose hope and kept persuading them that it would benefit a large number of people outside the embankments. The villagers of Jhitki and Bangama understood the significance of the embankments and they set an example by donating their lands. It has left a very good impression on other villages where they have gifted their houses and even their orchards," he said.[9]

He was, however, not speaking the whole truth. The residents of Jhitki, which he was referring to, narrate a different story. (See Box: This is ridiculous)

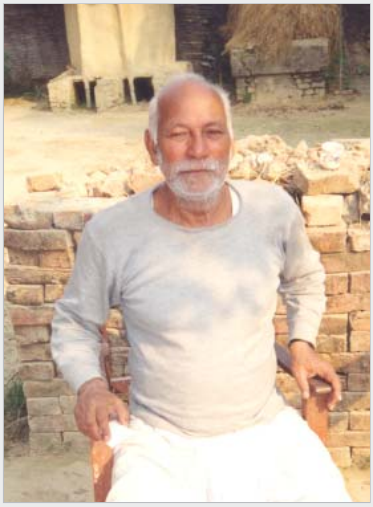
As the construction of the western Kosi embankment extended south of Kisunipatti, stiff resistance to its alignment came from two thickly populated and relatively prosperous villages — Mataras and Tardiha (Map. 3.3). Active channels of the Kosi were flowing very close to the east of these villages. Both of them were going to be squeezed between the river and the western embankment. They demanded a change in the alignment of the embankment so that it could be located between the river and their respective villages and protect them from the onslaughts of the river. Construction work had to be stopped for sometime in that reach.

When the alignment of the embankment ran into jeopardy, the then Chief Engineer of the Kosi Project, K.V. Ekambaram, suggested that the case for saving Mataras and Tardiha from the onslaughts of the river be referred to the Central Water and Power Commission. He felt that without a thorough investigation, the benefits could get converted into losses. He further suggested that the embankment under construction, instead of being extended to Nawada, be terminated two kilometers closer to a tank in Madhepur pending a further decision. If the demand to change the alignment to save Mataras and Tardiha was met, it was anticipated that similar demands would be made by other villages that were falling within the embankments. This would result in a major reworking of the embankment's alignment.

It seems that the Kosi Project authorities had not anticipated such a situation, but they were willing to accommodate the people's demand. It is also a fact that the proposed alignment was drawn carelessly as K.V. Ekambaram had to clarify that the topography of the land below Madhepur ought to be studied in greater details and every effort would be made to publish the maps within the next two to three months. For further protection, a project would be made after consultation with the Collector of Darbhanga. The people in the area were facing enhanced floods due to the westward shift of the Kosi for the past few years but if extra damages were faced following the construction of the embankment, proper arrangements ought to be made to face the situation, he maintained.[10]

Rehabilitation was a long-term issue for the flood victims of the Kosi but they had to contest an immediate battle for their survival that was caused by the imposed alignment of the embankment and the floods of 1956. A delegation led by Ram Sevak Thakur met T.P. Singh and Hari Nath Mishra on September 12, 1956 to tell them that 15 houses, valued at Rs 4 lakhs, were eroded in these villages. They suggested that the western embankment be joined straight between Rajuahi and Karahara (Fig. 3.4). This would save the villages of Mataras, Bisun Pur, Kapchhua, Kalua, Tardiha, Bochahi, Ajrakabe, Bhawar, Kusaha, Siparaha, Asma, Sikaria, Agargarha, Kusaul, Mahisam, Janardan Pur, Bhaluahi, Marauna, Nawada, Tengra, Kurso, Bhumpur, Sarauni, Rupauli, and Chunni, etc. The combined population of these villages was 32,000 that was spread over an area of 31, 000 acres.[11] This was not possible without changing the alignment of the embankment. Consequently a change was made. Tardiha is now outside the embankment but Mataras is still located within the two embankments. The local people have interesting

This is Ridiculous



"This is ridiculous. Someone deprives you of your land. Will you part with it happily? We all had opposed the alignment of the western Kosi embankment. Jogeshwar Jha, who later became a Member of Parliament, led a movement opposing the alignment in this area and wanted it to be pushed eastwards failing which our village was going to get drowned in the river. But Lalit Narayan Mishra, T.P. Singh, the Administrator of the Kosi Project and the project's Chief Engineer, K.V. Ekambaram, came to our village and told us in very plain words that we would be gainers if we stayed back within the embankments. They, however, did not elaborate the gains and said we would repent our decision if we tried and succeeded in keeping our village outside of the embankment. They told us that they had come just to explain things to us and if we wanted to launch a movement, the government was well equipped to deal with it suitably.

A meeting of all the village elders was called to discuss the issue and we sought the advice of our lawyer Rai Saheb Shiv Shankar Jha. He told us that if the government wanted to acquire the village land, it would do it by hook or by crook and it would be impossible to prevent it from doing that. He advised us to part with the land in the interest of the country and accept whatever compensation the government was going to give.

We gave our land without putting any condition before the government but, at the same time, ensured that we were paid proper compensation for the land and that too here in our own village. We would not go out to collect it. We lost some land permanently within the alignment of the embankment. Some land was acquired temporarily as a borrow pit for putting earth on the embankment and was returned to us as a ditch. We were also compensated for the standing crops on these lands. The Land Acquisition Office for the western embankment was located here in Bhutaha and all the compensation was paid to us from that Camp Office. Later, we built about half-a-kilometer length of the embankment by *shramdan.* Enormous expenses were incurred on the embankment length that was built by *shramdan.*

Our village is located on a very high elevation and Lalit Babu might have known this fact and that was why he asked us to stay back here. He used to say that there would be enormous sedimentation here and we would enjoy being here. Fortunately, floodwaters never came to our village, either in the past or even now. In the floods of 1987, the affected people from the countryside took shelter in our village. According to the original drawing, the embankment was supposed to have passed through Thakurbari east of Bangama, the middle school there and through Bangama village. All these places are located outside the western embankment. The alignment of the embankment was getting kicked around everywhere and we also participated in the process. What is built now, was not there in the designs.

A part of our village was given rehabilitation sites north of Auraha; some people got rehabilitation sites west of Bangama and Bhutaha where, initially, some huts were constructed but these places were far off from our village and our agricultural land. It was not practical to live that far from our village and fields. Our next generation would not know at all that there was a rehabilitation site for our village.

One thing is very special to our village. When the foundation stone of the Kosi Project was laid here in Bhutaha by Dr. Shrikrishna Sinha, then the rituals were performed by Pt. Mahabir Jha of our village. He expired in 2001 at the age of 90 or 95 years."

— Narrated by Bhogendra Jha
Jhitki Village, Laukahi Block, Madhubani district

memories of the time when the embankment was being constructed. (See Box: Doing Everything To Save Oneself) Mataras, however, was not that lucky. (See Box: Nobody Helped Us Except Nature)

Doing Everything To Save Oneself

"According to the original plans, our village Tardiha was going to be trapped between the river and the western embankment of the Kosi. In 1956, construction of the embankment started south of Kisunipatti and the alignment was drawn till Madhepur. We were located only 30 meters away from the river. We knew that if the river spilled its banks in the rainy season, the floodwaters would enter Tardiha and the western embankment would not allow it to spread further. We knew, we were going to be face-to-face with death. A portion of the embankment was being built by contractors and the rest was allotted to Bharat Sevak Samaj (BSS). Lalit Narayan Mishra was in charge of BSS. We first approached the project authorities to save us from the menace of the embankment but nobody cared to respond. Then we thought that we would have to do something ourselves to prevent the construction of the embankment. We chased the labourers and snatched their spades and threatened the contractors with dire consequences if they continued to work. We raised 'Go back' slogans whenever we saw the engineers. When that much was done, many leaders, small and big, along with engineers started coming to us for compromises and finding a way out. That included veterans like Dr K. L. Rao, Kanwar Sain, K.V. Ekambaram, Deputy Chief Engineer P.R. Guha and Lalit Babu.

Lalit Babu said that if Tardiha could be saved, it would be saved at all costs but opposition to construction work must stop. We told him that we were concerned about our fate and falling into the trap laid by the embankment. If that could be solved, the resistance would automatically melt away. The rehabilitation issue had not picked up by then. Our problem was that our village was not only likely to be hit by the main channel of the Kosi, two other smaller channels were also on the verge of attacking us. Lalit Babu once brought engineers from Patna as well as Delhi for consultation. They maintained that if the villagers could block these two smaller channels, other things would be become easy. We told them that we had no experience of handling streams and would not succeed in the venture. Lalit Babu pressed my hand from behind and taking a clue from him I kept quiet.

He took us to the base camp of the project at Ghoghardiha and gave me an advance of Rs. 40,000/- for plugging the two smaller channels in the name of BSS as I was the leader. We gave the contract to a person but when the river was in spate, in the month of May, everything was washed away in one stroke. "What next Lalit Babu?" we asked. He said, he would go to Delhi to seek Nandaji's advice. He then informed us to come to Patna with a delegation and the problem would be solved.

Some 13 persons including Pratap Narayan Jha, Bhuwaneshwar Jha, Ratneshwar Jha, Nunu Jha, Shri Kant Mishra, Munshiji Yadav and myself went to Patna where we met leaders of different persuasions. Some of them were sympathetic to our cause but many of them were of the opinion that it was too late to do anything. Shrikrishna Sinha was the Chief Minister and was away in Delhi. We had to wait in Patna to meet him. We went to see him on his return and he asked that only one person come for discussion. We requested him for a meeting with the group and asked for his blessings. That led to our mass entry into his office.

Nunu Jha gave him a sacred thread with a request that he should defend its virtues and protect the brahmins and the cow. Sitting on the floor of the office he said that if Tardiha got trapped between the river and the embankment, the lineage would be terminated as nobody would marry his daughter in our village. He then sang a devotional song asking Lord Krishna to save our lives (Incidentally, that was the name of the Chief Minister also.) Listening to the song, the women from the Chief Ministers' house joined us. The Chief Minister was a very emotional person and tears started trickling down his eyes. Tears were trickling down from our eyes also although the reasons were different.

We showed him the proposed and desired alignment of the embankment. He asked us to meet Shri Anugrah Narayan Singh (Finance Minister) and assured us that he would phone him. We met Anugrah Babu also and he, too, gave a good response. We happily returned home. A survey for a ring bund around Tardiha was completed after the rains. Mataras was also surveyed but they remained inside. My house was closest to the river and every body used to assemble here. P.R. Guha used to visit us frequently. South of this place, there was a movement of sorts against the embankment. Somehow we could manage to remain on the outside.

Remember, any person on the verge of death will do everything to save himself and we did precisely that."

— Narrated by Indra Kant Jha, Tardiha, Madhubani district

Nobody Helped Us Except Nature

"The original alignment of the embankment was to run from Belhi to Jhamta through Hatni and Dhabghat. Belhi is located east of Ghoghardiha and west of Nirmali. Kosi water started attacking our village in 1945 and the embankment reached here in 1956. It was clear then that we were going to fall within the embankments. We bowed before so many officers and leaders with no result and decided to do something on our own. We removed the pegs and flags the engineers had put marking the alignment of the embankment and were promptly booked by the project authorities. Mukhia Prayag Yadav and my father, Vishwanath Raut, went to Nirmali to meet Lalit Narayan Mishra who gave many assurances and came up to the village in a jeep to drop them. He even offered all possible help and also contracts in the project and persuaded them not to oppose the alignment.

On the other side, the people of Rahua and Bhakharin held a meeting at Madhepur High School towards the end of 1956 and resolved to oppose the alignment south of Madhepur. Lalit Babu asked them not to stall the work as that would be a cause of great embarrassment to all. The residents of Tardiha wanted the change in the alignment from Majulia Dhar and we wanted the change from Rajuahi.

We also met the Chief Minister demanding restoration of the original alignment of the western embankment or, at least, to provide a ring bund around Mataras. He agreed to our proposal and gave the instructions in writing. K.L. Rao came to our village and after seeing my house, said that this village should be located outside the embankments. He gave in writing that the work should be carried out according to the original drawings. Then P.R. Guha, the Chief Engineer, told us to let the embankment be built and that he would do something for the village, for certain. He even promised that the government would import yellow soil from outside and put on our land to make it fit for cultivating tobacco to improve our lot. It was proposed once to make raised mounds of earth in our village to protect us from floods. The engineers used to call such mounds, the Govardhana. Some foreigner engineers also came to our village. It was hard to understand them but it was obvious to us that the coming days were going to be testing times for us.

But we were not convinced and as a mark of protest, we built our huts on the constructed portion of the embankment itself to give a signal to the government that if it did not take us outside the embankment, we would live on the embankment itself. This information reached the division in no time and the Executive Engineer, a very petulant person, came with his team in a jeep and started demolishing our huts. The people turned violent and hit his jeep with *lathis* and chased him and his henchmen away. That annoyed him even more and he threatened that he would see to it that nothing was done to protect the village. We were told later that the first thing he did after reaching his office was to tear the drawings related to Mataras and that was the end of our dealings with the Kosi Project. Thus, Tardiha was saved but we were destined to doom.

Had the government stuck to the original plans, then villages like Kapchhua, Mataras, Bishunpur, Gohiyari, Dhabghat, Saharwa, Kamrail and Siripur, etc. would all have been located outside the embankment. From Lalit Narayan Mishra to Shrikrishna Sinha, nobody helped us but nature did. The Kosi has gone far away from us but there is no respite from the trouble as the Bhutahi Balan has started devastating our village."

— Narrated by Lekh Narayan Rai
Mataras, Madhubani district

The alignment of the embankment became a headache for the engineers of the Kosi Project. There were varied demands from the people and every villager wanted to be located outside the embankment and thus save himself from the onslaughts of the river. The embankment was to pass through Madhepur initially. Then a proposal was made to shift it eastward. Four villages including Kurso demanded that by shifting the alignment a bit further, they would also come outside the embankment and hence the proposal for a straight line between Rajuahi and Jhamta. Other people suggested that the embankment run straight between Majulia to Jhamta and if that were done, there would not be a need for the ring bunds around Sikaria and Tardiha. That being said, the people of Mataras started demanding that if the embankment could be made to pass east of Tardiha, what if it were pushed further east so that Mataras also could be brought outside the embankment alignment. If that could be done, why not close the mouth of the Majhari Dhar near Nirmali and start the embankment from Rasuar near the Nirmali ring bund and bring that to Karahara via Alaula, Hatni, Amahi, and Banarjhoola. If that was done, there was no need to construct ring bunds around Tardiha, Mataras and Sikaria. This would also automatically protect the Kurso group of villages. Thus every person had his own suggestion to make and press for its implementation. The alignment of the embankment was now of little consequence to engineers of the project and sometimes they encouraged the villagers to press for changes. (See Box: Change Possible Says Kanwar Sain)

Eastern Embankment Villages also Want Out

While the western embankment on the Kosi was being pushed eastwards, concern was also growing on the eastern embankment because, if the waterway was being reduced there, all the water from the western side could be expected to get diverted toward the eastern embankment. Also when the villages located close to the riverside of the western embankment had successfully stalled its construction and changed its alignment to come out of the embankments, why could the same thing not be done on the eastern embankment? The inhabitants of Dharahara *Thana* of Saharsa district demanded that the eastern embankment of the Kosi be pushed westwards 2km south of Barahi to protect the villages of Barhar, Partaha and Gobindpur. Similar demands rose from Bangaon and Mahishi villages further south. They too resorted to agitation and managed to push the eastern embankment away from them towards the west. In the meanwhile, the alignment of the western embankment was finalized and it was traversing from east of Pauni, Sikaria and Tardiha to Bheja via Belha (Fig3.4). It was to be extended up to Jamalpur from Bheja.

This decision helped many villages along the western embankment of the river to be located on the countryside there. The *thanas* of Singhia and Biraul too, were now located outside the embankment and that was an occasion to celebrate their victory.

The villages of Hati and Barahi, which were located within the eastern embankment pleaded with BSS to change its alignment so that they would be located outside the embankments. The local administration assured the villagers that their requests would be looked into.[12] (See Box: They Have All Become Beggars)

The Trapped Want a Larger Waterway

With the squeezing of the embankments on either side, those left within the Kosi embankments were pushed into utter despair and their discontent started simmering also. Towards the end of 1956 they started organizing themselves against the injustice done to them. They were demanding compensation for the losses incurred

Change Possible Says Kanwar Sain

"The first alignment of the western embankment was made from Mataras to Rahua Sangram via Bath and Tardiha. This was changed and a movement was a must then. My father along with many others contacted Lalit Narayan Mishra. He said that some top officials of the Kosi Project were coming to the Kosi Dak Bungalow for a meeting of the Kosi Control Board. Misharji asked us to come in a delegation and tell them the problems. The case was presented before them along with maps. The local engineers opposed the change but Kanwar Sain said that the change was possible. The Executive Engineer did not take very kindly to us and wanted that my house, at least, should fall on the alignment. We contested it in the High Court and won. We also represented our case to Anugrah Narayan Singh who was of the opinion that so much money was already invested in the changed alignment and any more tampering with it would add to the cost, but after a lot of persuasion he was convinced."

— Narrated by Raj Kumar Lal Das, Bhaluahi village, Madhubani district

They Have All Become Beggars

"The eastern embankment was constructed up to 150-200 meters north of our village in 1956 and it had become obvious that our village would fall on the riverside. That sent shock waves in our village as the embankment was to pass through Dumra. It was around this time that the Mokamah rail bridge on the Ganga to connect Barauni to Asansol was ready for commissioning and Dr. Rajendra Prasad had come to inaugurate it. Dr. K.L.Rao had accompanied him to Barauni. Two persons from our village, the mukhia Anant Kumar Jha and Sushil Kumar Jha went to Barauni and brought Dr. K.L.Rao to our village requesting for a change in the alignment of the embankment. We had already convinced Lalit Narayan Mishra and Rajendra Mishra for this change and had corresponded with the state and the central governments in this regard. Ours was a Congress village and we had contacts in Patna and Delhi and could get things done. Dr. Rao said that he would change the alignment but we would have to face waterlogging in the future. He was a great engineer and knew what was going to follow.

We felt that if we lived on our land, we would live with all the pomp and glory, even if faced with some hardships. Location of our agricultural land on the countryside of the embankment did not bother us much. Dr. Rao's words have now come true. Our village faces waterlogging for about eight months a year and the floors of the houses remain moist. Our fields are located inside the embankments and face erosion, sand casting and waterlogging all the time. Everything depends on God now, He is the saviour and He runs the show for us.

Our adjoining village, Hati, was dominated by Rajputs and was a very prosperous village. It was more like a gold mine. We pursued the matter with the leaders and managed to be located outside but they remained inside. They have all become beggars. The village was eroded in 1995 and the residents were compelled to move on to the embankment. We lost only the land but they lost everything. Eraji and Kathwar, too, suffered the same fate. They are all either cramped in the rehabilitation sites or caged within the embankments."

— Narrated by Phuleshwar Jha
Barahi village, Navhatta block, Saharsa district

by them during the rains, arrangement of dwellings during the rainy season and widening of the spacing between the two embankments to the extent possible. They thought that if the spacing of the embankments were increased, then more waterway would be available. The floodwaters would flow over a larger cross section and the flood levels would be reduced accordingly. They felt that the government was hell-bent on pushing them into darkness for all times to come and that they would resort to *satyagraha* if their demands were not met. They got so enraged that they even attempted to cut the western Kosi embankment at Alaula on December 31, 1956 but good sense prevailed and they decided to give the government another chance to decide things afresh.[13]

3.3 Armed Police To Quell Dissent

There was widespread resentment among the people regarding the embankments and work was suspended at most places. The general elections of 1957 were approaching and the government was not in a position to deploy armed police force on the scale that was needed in the area to ensure that the construction of the embankments proceeded as planned. The work on the western Kosi embankment remained suspended till the elections were held.

A meeting of representatives from 87 villages under the leadership of Jaidev Salhaita was held in Kusamaul village just before the general elections on February 4, 1957 and it was resolved that the government should be pressed to follow the embankment alignment that was supposed to have passed through Madhepur. People felt that in order to save 14 villages, the interests of 79 villages trapped within the Kosi had been sacrificed. They pledged to fight it to the last. They also suggested that some twenty lakh rupees were already spent over the works of the Madhepur alignment and it would not be wise to waste that money. They apprehended that by reducing the spacing of the embankments, the villages located within the embankments would simply be swept away by floodwaters. They informed the concerned officials of the Kosi Project about all this and

sat on a *dharna* from February 6, 1957. [14] (See Box: The Government was also trapped within the embankments)

Some 36 villages were issued notices under Article 107 of the Indian Penal Code. The Collector of Saharsa assured the project authorities on February 28, 1957 that police would be mounted at all strategic points by March 13, 1957. It was expected that enough police force would be available by then as the general

The Government was also trapped within the embankments

"My grandfather, Jageshwar Jha, was a really hard nut to crack. He was a respondent in 182 court cases but never got arrested. He was that smart. We were only kids then studying in class 5 or 6. We used to listen to stories of the Kosi embankments from our grandpa.

When it was almost certain that there was no escape from the western embankment and that our village was for sure going to get trapped within the river and the western embankment he was alerted. He had a colleague, Jaidev Salhaita, from the neighbouring village of Bariyarawa who had admirable abilities of mobilizing masses and leading struggles. Meetings were held in many villages and it was decided that if the spacing between the embankments was shrunk and the western embankment was made to pass through east of Mataras, then that would make life very difficult for the trapped villages. Thus the western embankment should not be allowed to be built. The government till then also held the view that a lot of money was already spent on the Madhepur alignment and it would not be possible to change it. We wished that the western embankment should not be built at all and if that could not be avoided, the earlier alignment via Madhepur should be adhered to. That would provide a larger waterway for the river and our miseries would be lessened.

The residents of many villages in the south met T.P. Singh, Additional Chief Engineer P.R. Guha and the Chief Minister Dr Shrikrishna Sinha with the proposal but without any result because the villages were deep inside on the riverside and the government was hell-bent on completing the western embankment. Those villages located further south fiercely agitated against the alignment, got it changed in that reach, pushed the embankment eastwards and were secured in the countryside of the western embankment although there were many villages that wanted the embankment to be pushed further eastward and were not happy with even the changed alignment. The new alignment of the embankment was to pass through west of Karahara. Karahara was also going to get trapped within the river and the western embankment, just like our village. The situation was such that there was no sympathizer left to look into our cause. Out of sheer desperation, one day the residents of Karahara cut the western embankment. The river was flowing close to the embankment and it spilled, took a turn and inundated the countryside. The emerging river water badly hit the villages of Rahua and Sangram. The residents of the villages on either side of the embankment picked up their *lathis* and came face to face with each other. A fierce fight ensued among the parties who were friends and relatives until the day before, but were then separated by the embankment. The countryside people wanted the embankment to be built while the riverside residents were opposed to just that. The government was also trapped within the embankments along with the people.

We bowed before all and sundry, including Dr. Shrikrishna Sinha and Anugrah Narayan Singh in Patna to Gulzari Lal Nanda in Delhi for a solution, but all our prayers fell on deaf ears.

Later, the *lathis* were replaced by guns and once the situation took a turn for the worse, police firing became imminent. But there were standing instructions from Anugrah Narayan Singh not to resort to firing as the embankment was being built to protect people and not to kill them. Irrespective of the provocation, no firing should be resorted to by the police, he said. Orders were issued to confiscate the property of my grandfather and he absconded. A police party came to our village and took away a bullock of ours which they returned after some days. Jaidev Salhaita of Bariyarawa, Bhekho Kunwar of Kharik and Nagendra Jha and Bhola Singh of Karhara were also booked. Lalit Narayan Mishra came to our village for a compromise. There was not enough black cloth available in the village to stage a black flag demonstration against him. The villagers brought out their umbrellas and opened it before him in lieu of black flags as a symbolic resistance to the project. They were so agitated that once they even planned to drown the Additional Chief Engineer P.R. Guha in the Kosi. They took him in a boat to the midstream of the river. Grandpa told us that many villagers also might have died had the boat overturned. That was the reason to drop the idea."

— Narrated by Shyam Sundar Jha
Dwalakh village, Madhubani district

elections would be over.[15] After the government took the stand to deploy armed police at the work sites, the engineers too started taking a tough line. P.R. Guha, Additional Chief Engineer, Kosi Project, stated clearly that no more changes in the alignment of the Kosi embankments would be entertained and that led to turmoil in the area. (See Box: Embankment Splits People Into Warring Factions)

Embankment Splits People into Warring Factions

"The embankment reached here in 1956. Mr. Gill was the engineer who used to come to our village for surveys. It was wrong to build the embankment in the first place but if that were to pass through Madhepur, we all thought to make a sacrifice in the larger interest of the society although we knew that we would be trapped inside the embankments. But when they changed the alignment and placed the embankment here, right over our head, then we were offended that if the government and the society around us were not bothered about our well being, how long could we undergo the rigours of one-sided love?

The alignment from Madhepur to Rahua was being opposed by many villages south of it. They wanted it to be pushed to the east so that they could be located outside the western embankment. That was going to squeeze us between the river and the western embankment and make our life miserable for all times to come. We wanted the alignment to follow the Madhepur route to provide some space for the river water to flow. Project staff like T.P. Singh, K.V. Ekambaram, P.R. Guha and Sachin Datta used to visit our villages almost everyday convincing people to let the embankment be constructed according to the changed alignment, the one suggested by the villagers down south. We were opposed to it and one day we cut the embankment, fixed our flag on it and sat on *satyagraha.* The embankment had split us into two warring factions.

This hurt the people on the other side and they raided our villages armed with *lathis.* We were also prepared and all of us had soaked our hands in buckets full of red colour so as distinguish between 'our men' and 'their men' while fighting. We were friends and relatives until the day before but the embankment had turned us into enemies. Some 87 villages, south of Mataras, were on our side and wanted the embankment to pass through Madhepur. The Collector of Darbhanga, Jacob, came to our village with T.P. Singh, P.R. Guha and other engineers. Our situation was really bad as we were going to be thoroughly unprotected against floods in the Kosi. He instructed engineers to take corrective measures and within a week sent us a list of promises made. He, in a way, helped us. He instructed the engineers to send a factual report about the situation to the state and the centre. After going back to Darbhanga, he wrote us a letter requesting us to let the western embankment be built and he, on his part, would take care of relief being provided to us, the education of our children, remission of cess, jobs to one person per family in the Kosi Project and rehabilitation.

But just a day before the delivery of this letter, the Superintendent of Police of Darbhanga booked us. The police came and arrested Gopalji Jha, Maujelal Mandal, Raghunath Rai, Amrit Narayan Singh, Chitta Narayan Pathak, Bhola Singh, Nagendra Jha and myself. We should have been sent to Madhubani jail but for some reason they lodged us in Darbhanga jail. We were charged with torching government houses and cutting the embankment. After about a fortnight, we were brought to Madhubani jail. The jail doctor was a resident of Madhepur and was known to us. It was through his efforts that we were bailed out.

When we returned from the jail, the government had filed cases against us for cutting the embankment and wanted us to pay a compensation of Rs. 175,000/- for the damages incurred. We went to the Collector, Mr. Jacob, once again to seek justice. He called the engineers once again and told them that we were innocent and they better refrain from harassing us. The cases were withdrawn subsequently. We, in turn, lodged counter cases against the government that while we were in jail, all our crops of paddy, green gram and jute were lost and wanted the government to pay for our losses. We copied it to the Block Development Officer who told us that we would not be able to sustain the resistance and that if we insisted on compensation, all others in a similar situation would follow suit. He advised us to accept rehabilitation and the government would help us. We demanded a ring bund around our village instead of rehabilitation and that was granted. The ring bund was constructed but it was washed away in the floods of 1966. The story ended there. There is a limit to one's fight."

— Narrated by Tara Kant Jha
Karahara village, Madhubani district

The unit leaders of BSS, who had gone on a retreat, returned but did not resume work because they feared violence and wanted police protection.[16]

It seems, the Inspector-General of Police (IGP) had already promised the Chief Engineer that police protection would soon be available. The Deputy Chief Administrator, Sachin Dutta spent five days in the disputed villages convincing people to allow the embankments to be built. His efforts did not yield the desired results. The Additional Chief Engineer, P.R. Guha, went up to Jamalpur on a similar mission but the people there were kicking the alignment of the embankment like a football into the rival's goal post. The agitators, who were opposed to the embankments, from Karahara to Bheja and from Bheja to Jamalpur and Bhanthi, were vigilant all along the length of the embankment. They uprooted pegs and flags put by the project engineers, snatched their dumpy levels and chased them away at many places. Similar incidences were taking place in the Dharahara *Thana* on the eastern embankment. A spokesperson of the government told mediapersons on March 8, 1957 that the government had an option to stop the work as completed and warned the people to face the floods. The government would not come to their rescue.[17]

Immediately after the swearing in of the newly-elected state government on March 16, 1957 armed police was dispatched to the construction sites of the embankments on March 17, 1957 and work resumed on the western Kosi embankment. The resistance to the project, however, never subsided. It became even more fierce between Chunni to Tekunatol, Bheja to Tarahi, and Tarahi to Jamalpur. Stiff resistance to the project officials was also seen at Karahara, Dwalakh, Tengaraha, Bariyarawa, Darah, Kharik, Bhakharain, Rahua, Sangram, Musaharia and Baghawa. The Kosi Project had successfully split the people into two blocks, one who wanted the embankment spacing to swell and the others who wanted it to shrink.

While the embankment construction was opposed all along its length, after the general election of 1957, the government stationed armed police everywhere and the project authorities tried to take a tough stand against the agitators at its behest. The days of persuasion were over and the agitators now faced bayonets. Many people believe that the construction of the Kosi embankments was done in a very congenial atmosphere and there was no resistance to it from any quarter. They also add that if there was any difference of opinion, the people could have opposed the construction, "You should remember that this project was executed with people's participation. If the benefits were not there, then people could have laid down in the foundation trenches so that the embankment could only be constructed over their dead bodies."[18] The fact remains that this is exactly what had happened then. But those with selective memory and pretending innocence about inconvenient truths are tough persons to deal with. It becomes tougher if they occupy a high position in society or the government. Nevertheless the government had to issue a press release to caution people that they refrain from violence and unruly behaviour. (See Box: Press Release)

The government had very successfully split the people into two blocks. On one side were the residents of the villages who wanted the spacing between the embankments to be reduced so that their villages fell outside the embankments and on the other those who were doomed to live within the embankments. Their demand was to increase the spacing between the embankments to the maximum extent possible so that the impact of the floodwaters on them would be reduced. By this time the government had decided that the western embankment would be aligned from

Press Release

It has been brought to the notice of the state government that the residents of some villages close to the river bank are indulging in all sorts of undesirable activities and obstructing the work going on in the Kosi embankments in Saharsa and Darbhanga districts. The alignment of the embankments has been drawn making the best use of the available technology. It is undoubted that the condition of the villages located between the embankments subsequent to their construction would become so unbearable that it would not be possible for them to remain there. The government would put all its might in rehabilitating the residents of such villages. At the same time, it would not tolerate any resistance to the construction by the said villagers. The embankments constructed in the past two seasons have protected a vast area against floods in the districts of Saharsa and Darbhanga. The work that is continuing in this season would protect many more villages. It is not desirable that the benefits accruing over a vast area subsequent to the construction of the embankments are allowed to be nullified by the resistance put by a handful of villagers. The government will sympathetically consider their demands put through legitimate and peaceful means. It also wants to make it very clear that it will not tolerate any violence and unlawful activity.

- Translated from a press release of the Government of Bihar, Aryavarta, Patna (ed.), April 11, 1957, p12.

Kisunipatti to Bhanthi via Karhara. The rival parties had taken to the streets and they were face to face with *lathis* at many places.

The battle of Karahara was just the beginning. People fought pitched battles against each other almost along the entire length of the western embankment south of Karhara. The police was neutral and free to assault either side. Many villages were issued written notices by the government not to obstruct the official work. The workers of Bharat Sevak Samaj were chased away by the agitators, their offices burnt and the huts of the labourers set on fire. The villagers intimidated the labourers and heckled the officials. The situation at Agargarha Dhar was tense and uneasy calm prevailed between Jhagarua and Nima. Hundreds of agitators were put behind bars. The government apprehended that the movement could spread to other places and reinforced the police force at these points. As a reaction to these, women and children also joined the protests. They used to lie down in the trenches saying that the embankment could only be built over their dead bodies. No amount of persuasion and camping by the senior officials could convince them from trying to stop the work. Contractors vacated the sites and the Additional Chief Engineer pleaded with them to resume work, but they would not respond. Political rivalry that came to the fore during the general elections and the professional rivalry of the contractors was also aggravating the situation. Newspapers throughout April 1957 were full of such reports. The police had to intervene and separate the warring groups at many places and a large number of agitators were put behind bars. (See Box: "So What If You Were In Jail?")

Baidya Nath Mehta and many others like Parmeshwar Kunwar, Tul Mohan Ram, Yuvraj, Janak Singh and Janki Nandan Singh raised the issue in the Bihar Vidhan Sabha. Mehta charged the government, "When you go there, you will find the Kosi roaring like a lion destroying the land and the population alike. When the people ask you, 'What is our future? What is the perspective you have of the things that you are doing?… What is the government doing for us?'… then you throw them behind the bars."[19]

"So What If You Were In Jail?"

"Our village is located on the countryside of the western embankment but our agricultural land is located within the two embankments. Once the construction of the embankment started here, it was obvious that we were going to lose our only source of livelihood, our agricultural land. That triggered a movement here. Darbhanga district starts from the 32nd kilometer (from Kisunipatti) on the western embankment. Nima South, Chhilkora, Kiratpur, Jhagarua, Simri, Kubaul, Tarwara, Tetari, Bhubaul, Narkatia, Jamalpur, and Khaisa are located on the countryside while Barmotar, Amritnagar, Sirania, Pakaria, Lachhminia, Kadwara, Bhandaria, Ramkhetaria, Rampur, Chatra (Chakla), Raghunathpur, Barahipur and Lakshmipur are located on the riverside of the embankment. All these villages belong to the Kiratpur block of Darbhanga district.

The situation in these villages was very tense in 1957. Work on the embankment remained suspended for over a year and resumed only after March 1957. The original alignment of the embankment was to pass through Tardiha, Pali, Ghanshyam Pur, Biraul and end at Tilkeshwar. Some influential people attached to Bharat Sevak Samaj in Aasi and Kanhai got the alignment changed and got their villages out of the embankments. We were demanding that the embankment should be made according to the original design or else it should be shrunk in such a manner that Tarahi and Musaharia should be located outside of the embankment…. Altogether some 300 men and women were arrested for defying prohibitory orders. The women were not sent to jail. The Collector of Darbhanga, Jacob, was camping here in the Jamalpur Middle School when police resorted to firing to scare people… We were all lodged in Darbhanga jail and offered *satyagraha* there. Jacob came to meet us there and gave many assurances. Binoda Nand Jha was the Panchayat Minister and it was through his good offices that we got bail. Lalit Narayan Mishra had once camped in Jamalpur Middle School for six months and we all knew him. He later became a minister in Delhi. An agreement was signed with him in the house of Keshav Narayan Khan that we all would be rehabilitated. Bahadur Khan Sharma insisted on total rehabilitation on 'as is where is' basis to which Lalit Babu agreed. He also promised a college in Jamalpur and train services from Jhanjharpur, a job for every family and so on. Nothing of that sort happened. I had a certificate for serving a jail term of four months. They told me so what if you were in jail?"

— Narrated by Lakshaman Rai
Musaharia, Darbhanga district

3.4 Flexible Alignment, Servile Technology and Decisions by Opinion Poll

The setting was thus complete now. There were people on one side who wanted the western Kosi embankment shifted eastward, others wanted the eastern Kosi embankment pushed westwards. If both these demands were met, very little space would be left between the two embankments for the floodwaters to pass through. Those living in this zone did not want the embankments constructed in the first place. If this was not possible, they wanted the spacing increased to the maximum extent possible, which could only be achieved if the first two demands were rejected. As if that was not enough, there was another set of people who were simply not interested which way the embankments were aligned. They only wanted these embankments to be built so that they could get some employment and their number was quite significant. These were the people whom the government was using as a propaganda tool to say that there was so much demand for the embankments to be built. Each group had its own vested interest in the alignment and the project and was fighting the rest. This is what the government wanted, that the people fight among themselves and not reach any conclusion. This would give the government the necessary handle to do whatever it wanted to in the name of technical necessity, which, however, had been abandoned long ago. In all fairness, it should have been the engineers who should have decided the height, width and spacing of the embankments with the government taking care of the displaced people, but the entire issue was decided by something like an opinion poll.

There was no happy solution to this problem. Somehow the construction of the embankments was completed. Now the Kosi embankments are a caricature of the original alignment, if there was any. Should someone be interested in viewing cartoons of embankments and its technology, there cannot be a better place than the Kosi embankments.

We will analyze later whether these embankments fulfilled the stated objectives. The terror that they unleashed at the time of their construction had hardly subsided when they started breaching, keeping the population in the so called protected area on their toes.

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14. _____: "Kosi Tatbandh Ka Rekhankan", *Aryavarta,* Patna, February 14, 1957, p.6.
15. _____: "Kosi Tatbandhon Ke Rekhankan Mein Parivartan Sambhav Nahin", *Aryavarta,* Patna, February 22, 1957, p.2.
16. *Ibid*.
17. _____: *Aryavarta,* Patna, March 9, 1957, p.2.
18. Singh, G.S: As quoted in the *Proceedings of the First Delegates Conference of Barh Mukti Abhiyan*, Mishra D. K. (Ed), Burhawa Mahadev, Hazaribagh, Bihar, July 1-2, 1992, p.34.
19. Mehta B. N. : "Sarkar Ki Sinchai Neeti", *Bihar Legislative Assembly Debate*, June 21, 1957, p. 27.

4

Post-Construction Scenario of the Kosi Embankments

The Kosi embankments, as planned originally, were almost complete by 1959 but extensions were proposed from Bhanthi to Ghonghepur on the western side by 4km and from Mahishi to Koparia on the eastern side by 33km (Fig. 4.1). This extension work continued up to 1964. Thus it took about 8 to 9 years to complete the embanking part of the project. But before the construction work on the embankments could be completed the Kosi started attacking them. The first breach occurred in 1963 itself, just before the extension works could be completed. In this chapter we will review the major embankment failures till the monsoon season of 2007 and the responses of the people who were trapped within them, together with the opinions of those who lived in the so-called protected area outside the embankments. We will also read what the politicians and engineers said about the breaches.

4.1 Inaugural Breach at Dalwa in Nepal (1963)

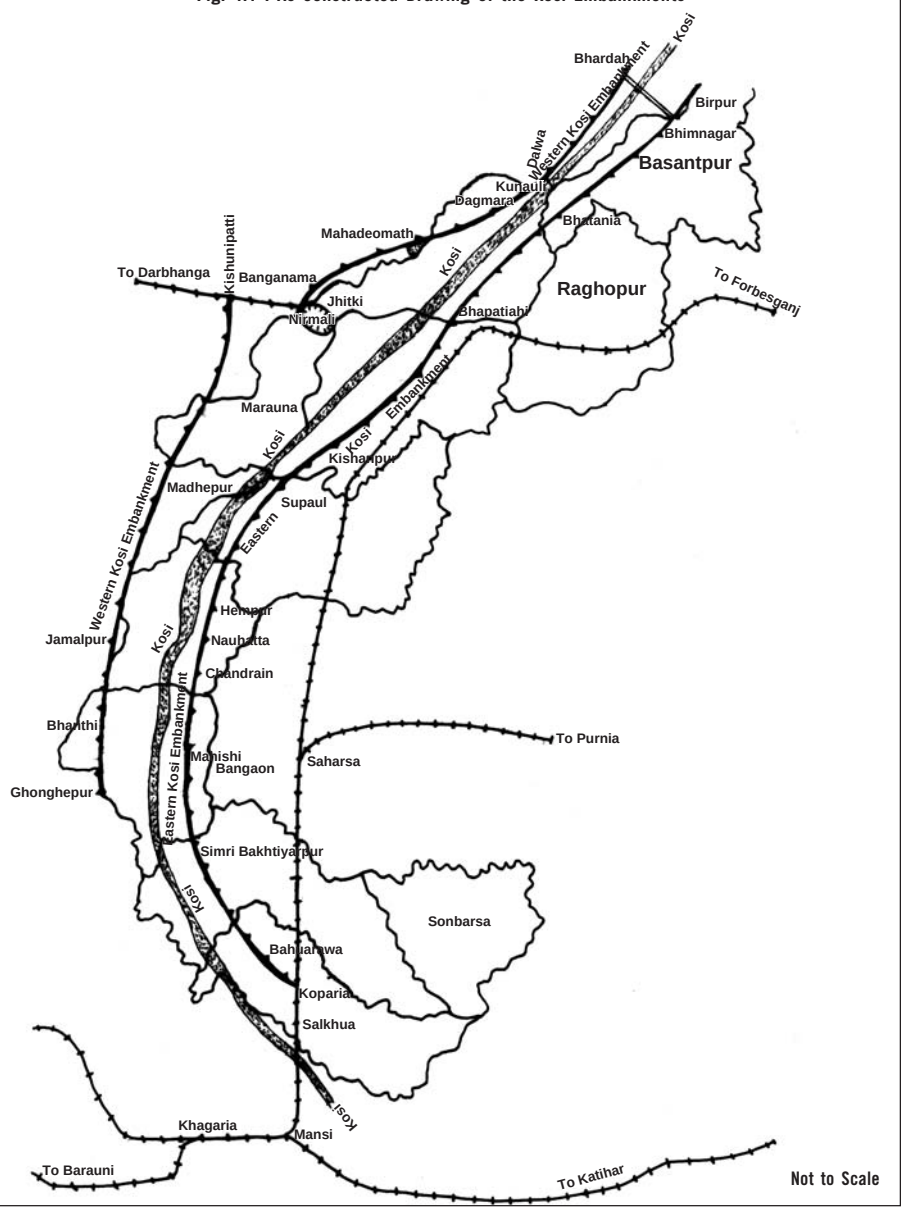
On the night of March 31, 1963 at 2300 hrs, the Kosi was finally tamed with the help of a barrage at Bhimnagar. Hence 1963 is a very important year in the history of the Kosi Project. A river with a minimum discharge of 340cumecs (12,000cusecs) and spread over a width of over a kilometer was diverted and controlled for the first time, not only in India, but probably in the world.[1] It was a feather in the cap for the engineers who had worked on this project. It was also the first time that a common man would not have to cross the river on a boat under the constant threat of capsizing during the rainy season. Thus everybody was obliged to the engineers of the Kosi Project and they were then held in high esteem.

The sense of obligation, however, did not last long. In June that year, the river started shifting towards the western embankment near Dalwa village, downstream of the barrage. It is the first village in Nepal across the Indo-Nepal border, adjacent to Kunauli, the last Indian village before the border. The news of the river getting close to the embankment started appearing in the press almost immediately after the barrage at Bhimnagar was commissioned and so there were demands to take immediate steps to control the situation. The responsibility for maintaining these embankments lies with the Water Resources Department of Bihar. The danger to the villages close to the embankment was imminent. A retired line embankment was proposed where the river was threatening the embankment. Its construction started in the last week of July. The road from Bhardah to Hanumannagar in Nepal was in a bad shape and posed problems to vehicular traffic. The people's unflinching faith in engineers was intact till then and they were sure that the latter would overcome this minor problem. The Irrigation Minister of Bihar, Dip Narayan Singh, and the Chief Engineer of the Kosi Project, Debesh Mukherji, air-surveyed Dalwa on July 29, 1963 and stated that the repair works were complete and there was no danger to the embankment.[2]

Dr. K.L. Rao, who had just taken over as the Minister of State for Irrigation in New Delhi on July 18, 1963 air-surveyed Dalwa on August 2nd and opined that the erosion at the site was under control but advised constant vigil.[3] The erosion suddenly became very acute on August 5th and stone crates had to be dropped in the river near the erosion point on a war footing to check its advance. In an editorial on August 8th, The *Aryavarta*, Patna edition said, "Ever since the embankments have been constructed on the Kosi, many a time they have been endangered but never allowed to breach. Hence, it is hoped that they would not breach even this time. The erosion of the Kosi embankment is a challenge to the engineers working in the project and they must accept it."

Apprehensions were expressed over the likely failure of the embankment on August 9th and it was feared that any breach of the embankment would affect an area of 800 to 1,000sq. km. Crops would be lost, villages would be inundated and houses would collapse in large numbers. A procession of ministers, engineers, politicians and bureaucrats toured Dalwa. Nepal's Minister of Irrigation, Dr. Nageshwar Singh visited Dalwa on August 9th to review the situation and assured the Kosi officials of all the help from Nepal while Dr. K.L. Rao expressed his concern over the

Fig. 4.1 : As constructed Drawing of the Kosi Embankments



situation in a statement issued from Delhi that it was the first time that all the waters of the Kosi had been made to pass through the embankments, although they had been completed three to four years ago. If anything went wrong with these embankments the hopes of the people living in the Kosi basin would be belied.[4]

The very next day, the erosion started and the swirling waters of the Kosi swallowed 1.5m (meters) width of the embankment over a length of 600m. This embankment was 32m wide at the base with a crest width of 5m. The erosion was so severe that the boulder crates that were dropped in the river were not to be seen anywhere. The weather and the road conditions were both unfavourable to the movement of vehicles and it was not possible for bigger vehicles to reach the dumping ground. At this stage some 2000 laboures and 300 technical personnel were struggling round the clock to save the western embankment. Electrical lines were drawn to the site and arrangements for boarding and lodging were made for the laboures on the site to avoid any inconvenience to them. The river water was hitting the embankment directly threatening it with a breach any moment. Since Dalwa was located in Nepal, the Government of India (GoI) was also informed to take necessary steps in the event of a breach in the embankment. There was a race between the river, threatening to breach the embankment, and the engineers completing the retired line. The Irrigation Minister of Bihar, Dip Narayan Singh and the Chief Engineer of Flood Control, CWPC, R.D. Dhir visited Dalwa that day and hoped that the retired line would be ready within 6 or 7 days.

On August 12th, the safety and security of the embankment slipped from the hands of the authorities and the river became the decision-maker. The engineers had virtually surrendered and the river was advancing menacingly. The Chief Minister, Binodanand Jha, along with Dip Narayan Singh, the Chief Secretary of the state, S.J. Majumdar and the Chief Administrator of the Kosi Project, S.N. Singh visited Dalwa that day. It was feared that in the event of a breach, some 25 villages in Darbhanga and Saharsa districts (Madhubani was a part of Darbhanga district and Supaul was a part of Saharsa district in those days) would be inundated. This would be in addition to the villages that would be inundated in Saptari district of Nepal. Standing crops over thousands of hectares were threatened with inundation. A prayer for a debate over the issue was made to the Rashtriya Panchayat of Nepal as many members felt that Nepal was made to suffer because of the implementation of the Kosi Project and the situation demanded a serious debate over the issue. Some members wanted the Indo-Nepal agreement over the Kosi to be reviewed and suitable amendments be made in it to take care of such situations.

As a matter of fact, the Kosi had attacked the eastern embankment opposite Dalwa near Gopalpur and Simri in 1962 and a similar situation had occurred there too, but a breach was averted. The river also attacked the western embankment near Dalwa and a retired line was proposed there by the Executive Engineer of the division, M.M. Bakshi. But since the location was in Nepal, the permission of the Nepal government was needed and the Indian or the Bihar government could not intervene on its own. It took about a year for the Nepal government to allow such construction at Dalwa and only after receiving the consent could work be started on the retired line.[5]

Binodanand Jha visited Dalwa once again on August 13th to see the progress of the work. The river had taken a sudden turn that day and moved 3m away from the embankment. Everybody breathed a sigh of relief. The government, however, did not slacken its efforts and made all the arrangements to deal with the situation in the event of a breach. About 20 villages in the Laukahi *Thana* were asked to evacuate. Twenty-one officers of the state government and 50 boats were put on the job. A relief center with a wireless facility was opened at Bangama, 8km north of Nirmali. Dr. K.L. Rao visited Dalwa once again on August 16th and expressed satisfaction over the progress of the work and hoped that the retired line would be completed within 3-4 days. He suggested further strengthening of the retired line. While things were improving at Dalwa, the Kosi opened a new front at Banarjhoola, 400m north of the erosion point at Dalwa, by eroding near the sluice gate there. This attack was sudden and severe.

The embankment breached near the sluice gate on August 20th but the land on the countryside was higher than the flood level of the river and hence the river did not spill. On August 21st, however, the river water gushed outside the embankment and the retired line also breached. Floodwaters spread into Dalwa and started flowing to a depth of 15 to 45cm into the countryside through the gaps in the retired line and the western embankment. The floodwaters first fell into the Sakardehi River and flowed back into the Kosi through the Tiljuga. The land between the retired line and the western embankment was about 52ha and there was waist deep water over 40ha in Dalwa. There were 47 families in this village with a population of 241. Of these, 92 persons from 22 families were shifted into tarpaulin tents at safer places on the embankment, according to official sources.

Munga Lal Yadav, a resident of Dalwa and then on the staff of the Kosi Project, says, "The river suddenly came close to the sluice gate. A south Indian Executive Engineer, H.K.N Ayyangar, was posted there. He used to don a turban and never used to eat anything cooked by others. He was a man of principles and never compromised on anything. When he saw the erosion near the sluice gate, he predicted that the embankment would breach very shortly and it did breach there after four days. Work on the retired line was in full swing. But nothing could be saved, neither the embankment nor the retired line. The emerging water passed through the villages of Dalwa, Bishunpur, Rampura, Mallian, Kunauli, Kamalpur and Lala Patti and entered the Tiljuga to finally pass through the steel bridge on the western embankment back into the Kosi. After that there is no count of the numbers of spurs or retired lines that were built here on the western embankment. In those days people used to demand that money be poured into the repairs and the embankment be saved at any cost. That is what this embankment is actually made of, money. The depth of the emerging water was not much and there was no loss of life."

Munga Lal Yadav

In 1964, replying to a question by Chetu Ram, Mahesh Prasad Singh, then Minister of Irrigation in the Government of Bihar (GoB), said that only 20ha were submerged at Dalwa and crops over 12ha were lost, without any loss of life.

Dr. K.L. Rao stated in the Lok Sabha on August 22, 1963, "Attempts are being made to close the breach in the ring bund. If that succeeds, there will be no further damage. What we intend to do is to construct the embankment on the original alignment and for that purpose we have to request the Nepal government to give us land along the original alignment and this alignment is to be taken up in September and when that is done, of course, the western embankment will be safe."

There was no loss of life and property because the river flow was low. Had this flow been to the tune of 10,000cumecs, the destruction would have known no bounds. The breach at Dalwa left many questions unanswered. One, no cognizance had been taken of the imminent danger to the western Kosi embankment near Dalwa in 1962. The entire work in 1963 had to be done on an emergency basis. Two, the project authorities' complaint of a shortage of labour at the site was far from truth. Baidya Nath Mehta, then Parliamentary Secretary to the GoB, who hailed from Kamalpur village, close to Dalwa, went around the villages to collect and mobilize labourers because the floodwaters would have hit his own village together with many others in his constituency. Hence his

concern was logical. Many political volunteers joined him in his effort with zeal but, "This had a very bad reaction in the official circles. They were angry and reacted sharply to his gesture. I have definite information that one of the officers even insulted the Parliamentary Secretary and a complaint was lodged with the concerned minister of the department. Because of the indifferent and humiliating behaviour of the officials, Baidya Nath Mehta returned to Patna. Following this, the engineers conspired to create an unhappy situation. They discouraged the labour by withholding their payments and transport facilities. They were told to either work under a contractor or on a muster roll or leave," revealed Vidyakar Kavi, a former MLC.[7]

Many volunteers from Madhubani district were ready to work on the construction of the retired line. The Block Development Officer of Ghoghardiha gathered 1000 volunteers to dispatch them to Dalwa but the Public Relations Officer of the Kosi Project rejected the offer and returned the *shramdaanis* on the plea that the project needed skilled workers and not volunteers.[8] It is hard to understand what skills are needed for earth work.

Ram Lagan Singh, who was in charge of rail transport in the Kosi Project and responsible for delivering materials to the site in 1963, interpreted the events differently. (See Box: The Egos Of Two Gentlemen Clashed At Dalwa)

Baidya Nath Mehta, too, made a scathing attack on the project authorities. He said, "The Kosi embankment was breaching but the Chief Engineer was not bothered ….the accident was taking place but the Chief Engineer was relaxing. He was camping only 26km from Dalwa, but he did not go there. He should have camped at Dalwa and averted the breach, he could have stayed in the Kosi Inspection Bungalow close by and looked after the work but he did not….the net result was that Rs. 15 lakh had to be spent on preventing the breach and another Rs. 11.5 million on its repair. With this money, a new project could have been completed."[9] The vested interests in the repair works had thus made their presence felt in the Kosi Project.

P.N. Trivedi

P.N. Trivedi, a former Chief Engineer of the Water Resources Department of Bihar, who was working in Dalwa at that time explained, "There was a

The Egos of two Gentlemen Clashed at Dalwa

"We could transport the materials as far as the railway lines permitted us to do so but beyond that it was impossible to haul stones as there was virtually no road. As regards sending back the volunteers who had come for repair works, the executive engineer, Mr. Ayyangar, was a man of principles and a no-nonsense engineer. In case he allowed the volunteers to come for work, that would encourage leaders and politicians to make a beeline for the work site, the fleet of vehicles would disturb the work, there would be speeches and unwanted assemblies at the work place. He made it amply clear to all and sundry that it was his responsibility to protect the embankment which he was very well aware of. He turned back the volunteers because they were more of a political force than just labourers. The threat was imminent and that was no time to build a new embankment but only to protect the one that already existed. Those days were different. An executive engineer was held in high esteem and everybody feared that situation would be desperate if the person resigned or left the job. That was the reason why despite a feud between Ayyangar and Baidyanath Mehta no action was taken against Ayyangar. These days, any village level leader can pick up a quarrel with an executive engineer and even assault him. The Government of Bihar after a lot of persuasion engaged Debesh Mukherji, the Chief Engineer of the Kosi Project, from Damodar Valley Corporation. He did not ask for a job from the government. They were all responsible persons and there was no loss to life and property following the breach at Dalwa…Two factors basically created the trouble at Dalwa. One, the site was located in Nepal and that gave it more publicity. And two, persons like Mehta and Ayyangar opposed each other. Baidya Nath Mehta was a very sincere and upright leader and used to teach mathematics in a college in Khagaria before joining politics. He had many other good things to do than politics. Unfortunately, the egos of the two gentlemen clashed at Dalwa."

— Narrated by Ram Lagan Singh,
Former Rail Transport In-charge, Kosi Project

curve in the alignment of the embankment near Dalwa. This curvature was there because the alignment of the embankment was changed on public demand. It had no relationship to the designed alignment. It was changed at will at all the places. Where the public pressure was not there, the political pressure was there. Because of this curvature, the river was attracted towards the embankment. All the field decisions then were taken on the model analysis report of the Poona Research Institute in those days and the Director of the Institute used to say that there was tremendous pressure on him to reduce the distance between the embankments and the condition was such that if they had yielded to this political demand, the two embankments would have merged into one and nobody knows what course the river would have adopted. Just by performing model tests, you cannot check the vagaries of the river. So many other things have to be done to keep the river in place. To prevent any erosion, there should be roads and railway lines leading to the location… These charges are baseless. You give us Rs. 6cr and we will build the road. If you don't have money, what can the engineers do?'[10] Similar sentiments were expressed by G.P. Shahi, a former Chief Engineer of Bihar, who was then working at the same location as an SDO. In a personal communication, he maintained that the trucks carrying stones remained stranded as there was no road that led to the erosion site.

The change in the alignment of the embankment was a big and tricky issue as we have already reviewed in Chapter 3. Its impact was visible in the case of the Dalwa breach. The *Aryavarta* wrote in its editorial of August 28, 1963, "It is worth remembering that the spacing between the two embankments of the Kosi was kept at about 16km, initially, to facilitate the flow in the river and to allow the water to spread over a large area. But with so much land falling between the two embankments, the landowners were likely to suffer. Thus the alignment was opposed and the spacing between the embankments had to be reduced. As a result, they are spaced at only five to six-and-a-half kilometers, at places. After the embankment breached at Dalwa, it must now be realized that if only enough space had been provided between the embankments to accommodate the flow and its spread, the western Kosi embankment would not have been endangered."

In this connection, a meeting of the Irrigation Minister of Bihar, Dip Narayan Singh, the Panchayat Minister of Nepal, Kharag Bahadur Singh and the Irrigation Minister of Nepal, Dr. Nageshwar Prasad Singh was held at the Kosi Project headquarters at Birpur on August 22, 1963. The Nepalese side offered to extend all cooperation in undertaking any long term programme to tame the Kosi. They also indicated that should a need arise for rehabilitation of the people in a similar situation, then its responsibility should be taken by the Government of India. It must be mentioned here that the Nepalese population at the repair site at Dalwa put no obstructions, although, they were the people

Chaos at the breach site

who would have suffered the most if the breach had acquired menacing proportions. Some rivalry among contractors may not be ruled out but that was all.

Yamuna Prasad Mandal, a Member of Parliament (MP), expressed his frustration over the breach and charged that he had cautioned the government, time and again, about the impending disaster at Dalwa but nobody was bothered and he was "ashamed that no timely action was taken up."[11]

4.2 The Breach That Did Not Occur – Kunauli (1967)

Once the Dalwa breach was repaired, the Kosi started attacking the western embankment at Kunauli, on the Indo-Nepal border. No untoward incident took place here and there was some complacency since Kunauli was located in India and hence the Nepal factor was not there. There was only an apprehension of a breach and a concern about the expenses. In reply to a question by S.M. Bannerji about preventing breaches in the Kosi embankment, Dr. K.L. Rao replied in the Lok Sabha on July 12, 1967 that , "In (the) case of a river nobody can say whether a breach will occur or not, and especially, in case of the Kosi, because the Kosi is all the time moving towards the west. It is on account of this peculiar nature of the Kosi that we have taken up the Kosi Project and this has prevented the river from moving and it has stayed in its place for the past ten years, it should have moved on to Jhanjharpur and nearer to Darbhanga."

It was the same Dr. K.L. Rao who, along with Kanwar Sain, had diffused the whole embankment debate after their visit to the Hwang Ho basin in China and wanted them to be made even before the barrage was constructed (See Chapter 2). If only he had said in 1954 what he said in 1967, the embankment plan for the Kosi might have been thrown in a garbage bin.

4.3 The Watery Grave of Jamalpur (1968)

"I had never seen such a flood in my life although I came from the same area," said Lalit Narayan Mishra, then Minister of State for Defence at the Centre after visiting the flooded areas of Darbhanga and Saharsa in October 1968. It so happened that there was a heavy and untimely downpour in the Kosi catchment in Nepal on October 3 and 4, 1968. All this water came gushing down the valley and then to the plains. It washed away the coffer dam constructed to protect the headwork of the Chatra Canal. This site is located about 42km north of the Birpur Barrage and the Indo-Nepal border. On October 5, 1968 the flow was to the tune of 25,853cumecs (913,000cusecs). As the water reached Birpur, all the 56 gates of the barrage were simultaneously opened. Nobody had ever imagined that so much water would come so suddenly. The maximum discharge observed in the Kosi till then was 24,210cumecs (854,000cusecs) in 1954 when the river was free to meander. Now the river was embanked on either side and this was the first major test of the embankments.

Incessant rains and the resulting flow in the river sent distress signals all over. The Commissioner of Bhagalpur, V. P. Kashyap, and the Collector of Saharsa, S. K. Chaturvedi, were camping at Supaul to keep an eye on the situation. The river was likely to overtop the eastern embankment near the 28thkm mark, north of Bhaptiahi. This accident was, however, averted with the hard work of the engineers and the local population. But when the flood level within the embankment attained alarming levels, the lives of the people living in nearly 400 villages within the two embankments were threatened. It was necessary to move them to safer places. Heavy rainfall and the swirling waters of the river made this operation nearly impossible but wherever the people sensed the imminent danger, they arranged for boats and started moving to higher and safer grounds. Wherever the embankments were close to the villages, the inhabitants shifted on to the embankments themselves. Many lives were reportedly lost in this shifting process.

Many people shifted to the Nirmali ring bund and they included the residents of Jirauli, Hariahi, Navtolia, Rasuar, Kevat Patti, Kadmaha, Kataiya, Sonapur, Dighia and Dudhaila villages. The traders and citizens of Nirmali made arrangements for their food and stay. The flood victims also occupied the block office at Nirmali and the block authorities made the arrangements there. Nirmali itself was threatened with a breach as the river water outside the ring bund was only one and a half meters below the crest of the bund and rainwater had also collected within the ring bund of Nirmali, virtually without any outlet. A battle for survival was being fought here, as in the event of any breach in the ring bund the residents of the town would suffer a watery grave. Keeping the embankment intact was not an easy task, by any standards, because neither was any labour force available nor was it possible to move the building materials. The much needed earth for the repairs of the embankment was also not there. It was the same situation all along the embankments.

Normally September 15th is taken as the end of the rainy season. Once this date passes peacefully, all the concerned persons like the contractors, engineers, officials, boatmen, etc. heave a sigh of relief and relax. This year, however, there was something else in store for them. Most of the crops within the two embankments were lost and houses collapsed in large numbers. The tributaries of the Kosi and the Kamla like the Tilyuga,

Bhutahi Balan, Kharak, Panchi, Ghordah, Bihul, Dhokra, Gehuma, and the Supain contributed their share in enhancing the miseries of the people. Thus the situation was grim within and outside the Kosi embankments but the climax was yet to come. Advancing floodwaters within the Kosi embankments wrought fresh devastation and destruction. (See Box: It Rained From Above While the River Rose From Below)

It Rained from Above While the River Rose from Below

"My village, Ara Patti, is located within the Kosi embankments and is, supposedly, at a very high level. There are two more hamlets of the village, namely Sugraul Dih and Aina Dih. It is believed that if these three settlements ever got submerged under the floodwaters, virtually, all the villages within the Kosi embankments would also drown. This happened once in 1968. I was a kid of 7 or 8 years but I very distinctly remember the events of that fateful night. The floodwater had started rising in the evening and by midnight it had started touching the beds and *chowkis*. We were never exposed to such floods. The walls of the houses were generally made of mud and they started collapsing during the night. That led to a virtual stampede. There was the Kosi rising from below. We spent one night like that and the next day the rains stopped but the river water continued to rise. As a child I was not bothered about what was going to happen.

It was around midnight that people from the neighbouring villages of Lilja, Majarahi and Kothia started collecting in our village. My father, Pitambar Chaudhary, was a postmaster. He was given a boat to carry mail and Bissu Mishra of Mahishi used to help him in distributing it. Heavy rains a couple of days earlier and the rising river prevented Bissu Mishra from going back to his village and my father asked him to help in rescuing the people. Bissu Mishra used to chant the name of his family deity loudly and pray for a safe trip back home. He was not sure whether he would be able to go back to his village, at all. All the villagers assembled at the Dih of Kachnari Kunwar braving the river water from below, amidst chanting of the name of Lord Krishna, the saviour, to look after his children. Ants and insects were crawling all over the bodies of the people. I was looking at all the events sitting over the shoulders of my father who was standing in knee-deep water. The night was spent in such chaos.

Sometimes one would hear the sound of a house collapse and people would start guessing whose house it could be and what was left in that house. While the owner of the collapsed house would worry about the articles left in the house, his neighbour would start preparing himself to hear the splash of his house. Amidst the chaos, one could hear the cries of women who would list the valuables and ornaments left behind. As the night passed, these cries changed to sobbing. The anger of the people was exceeding all bounds. They were blaming the government, the embankments, the river and their fate. They were blaming each other for offering *shramdan* in constructing the embankments and thus digging their own graves. Somebody said that he had urged all and sundry to move to rehabilitation sites but nobody listened and now all had to face the fury of the river. Some people suggested that they should go and cut the embankment and the others laughed at the idea because going to the embankments was not possible in that situation. Sometimes the people would shout the name of gods in chorus, which I also joined in, sitting on the shoulders of my father.

Early morning the next day, the water started receding very fast. As it dropped foot by foot the people started saying that the embankment must have breached at some place, but nobody knew the location. Later it became known that the embankment had breached at four places near Musharia, close to Jamalpur. It was around evening that people could walk again in the village but there were many who were still held up on rooftops along with rats, cats, dogs, ducks, hens, goats and snakes, all at one place with no hatred or contempt for the fellow living being. The cows, bullocks, buffaloes, and horses had all been set free when the water had exceeded the knee-level and most of them were swept away. Grains stored in houses rotted. Everybody lost their material possessions and we were left with a thick layer of mud over our houses and fields. If anybody was left with the walls of a room, it was impossible to open the door as it was at least half-buried under mud and unless that was cleared from within, it could not open.

We survived, but what about the people where the embankment had breached. They all must have died, many thought. Some people maintained that they should have gone to the embankment for shelter. I did not understand all that."

— Narrated by Manoj Chaudhari, Arapatti village, district Saharsa

Dr. Usha Kiran Khan describes the devastation in the so-called protected countryside. (See Box: In Just Two Hours It Was Hard to Distinguish the Inside of the Embankment from the Outside)

The embankment breached at Jamalpur on October 6th. It had, in fact, breached at four other points. Two breaches were at 40km from Kisuni Patti near Musaharia, two more cuts were located near Khaisa and the last one was one near Gandaul in Saharsa district. This was followed by a series of aerial-surveys by politicians and bureaucrats. Lalit Narayan Mishra was the first to visit. He reported five breaches within 1.5km near Jamalpur and feared a huge loss of life and property. The Relief Commissioner of the state, S.N. Singh, mentioned breaches at four places. Rajendra Mishra, Chief of BPCC, maintained that the floods had caused heavy damage in the districts of Darbhanga, Saharsa and Purnea and at least 200 people had been killed.[12]

Dr Usha Kiran Khan's narration of the Jamalpur breach describes a nightmarish drama. The recollection of K.N. Lal, a former Engineer-in Chief of Bihar is quite subdued. He says, "I used to be the technical advisor to the Chief Engineer of the Kosi Project and was posted in Patna as a Senior Executive Engineer. It was the festive season of Durga Puja and almost all the staff

In Just two Hours it Was Hard to Distinguish the Inside of the Embankment from the Outside

"Our village Musaharia, *thana* Jamalpur is located outside the western Kosi embankment and is almost adjacent to it. My parental village is within the Kosi embankments. I had completed my MA and had a child. My husband was in the Police Academy undergoing training for the IPS. *Sharad Purnima* was approaching on October 6, 1968 and everybody felt assured that the flood season was over. But suddenly one day the sky was overcast with dark clouds and it rained heavily for a couple of days. The embankment was full, up to the brim, and that submerged my parent's house. I had two sisters-in-law; both were young and one had a child too. They all moved to my village to stay with us thinking it to be a safe place. Those who did not have such connections moved on to the embankment itself with all their cattle.

All went well for two days. Our house was made of mud and so was the floor of the house. On the third night, on October 6th, all of a sudden the legs of our beds started sinking in the floor. Nobody knew the reason. It was night and there was panic in the village. People started running helter skelter. All the houses in the village were facing the same situation. We could see the water coming out of the hand pumps, on its own, as it was a full moon night. Now there was fear that the embankment might breach. Around 4 o' clock in the morning the embankment gave way. In just two hours it became hard to distinguish the inside from the outside of the embankment. We moved on to the embankment and stayed there for a day and then re-erected stilts in the house and returned home. Fortunately for us, the embankment had breached between Musharia and Gandaul, further down from Musaharia and we were not exposed to the surge of water. Had the breach taken place upstream of Musaharia, nobody would have survived in our village. It was said that the embankment breached because of seepage through it. Rats and foxes had dug holes into the body of the embankment and that led to its failure.

Firewood and cow dung cakes were all submerged. Food could not be cooked for want of fuel. Grains stored in the bins were destroyed but the one kept in *bakhar* could be saved. It was distributed in the village but cooked food still eluded us.

Diseases followed after the floodwater receded. My father-in-law had some knowledge of medicine and had a compounder to assist him. He treated many. Most people stayed on the embankment for many days and *khichari* used to be cooked for all, friends and foes together. It took about a fortnight to restore the house to make it worth living, because the floodwaters receded very fast. The crop loss was significant. Toilet facilities were not there and the women were subject to lot of inconvenience.

I had my grandmother-in-law living with us. She was over a hundred years old and had never seen such a flood. After the water receded, she herself started cleaning the floor. The layer of mud there contained all sorts of reptiles and insects, dead and alive. We forced her to take rest and only watch us work but she would not listen. She was in a state of shock and died a very slow death. She had gone to jail in 1957 for opposing the embankments."

— Narrated by Dr Usha Kiran Khan
Patna

K.N. Lal

had gone to their homes; some on vacation and some without it. I received a message from the Barahkshetra Control Room that a discharge of 913,000cusecs was passing through there and I was advised to take necessary action. I calculated the time that the said flow would take to reach areas below and having done that I advised the collectors of Darbhanga and Saharsa and the SDO of Madhubani to meet the situation and prepare themselves for relief operations. One Mr Sharma was the Director of Akashvani at Patna and I requested him to flash messages about the floods every half an hour and instruct people to move to safer places. The Chief Administrator of the Kosi Project, Mr Abbas, was in Ranchi and he rushed to Patna after getting the radio message. Slowly, the Chief Engineer and the Superintending Engineer also came down to Patna and we all flew to Birpur the next day…It was water everywhere as far as one could see. The situation where the embankment had breached, Jamalpur in Darbhanga district, was as usual because waters of the Kamla Balan and Gehuma stagnate there anyway whether there is breach or not. Not a single person died nor did anyone realize that an accident of such a magnitude had taken place. Later P.N. Kumra of CWPC conducted an enquiry into the event but I do not remember what he wrote in his report."

The Chief Administrator of the Kosi Project, S.A.F. Abbas, flew over the affected area on October 6th and was pleased that the floods of 1968 had afforded an opportunity to test the endurance of the embankments and that they had passed this test. He said that the project would make use of that opportunity to collect data to send to the CWPC and the Hydraulic Research Station at Poona for further analysis and to find out that if a similar incidence took place in future, what steps would needed to be taken.[13]

Slowly it was revealed that almost all the villages located within the Kosi embankments were affected by the floods and an area of about 70,000ha spread over 96 villages located outside the western Kosi embankments had been ravaged by the untimely floods. Adding the villages affected in Munger district (Khagaria was a part of Munger district then) also, this number would swell to 150.[14] So, the Chief Administrator of the Kosi Project was patting himself, the survival of the embankment being more important to him than the survival of the people and the safety of their life and property. Two thirds of the crops were swept away within the two embankments of the river, thousands of cattle perished in the floods and hundreds of dead bodies were seen floating in the floodwaters.

Two representatives of the Governor of the state, M.S. Rao and D.B. Anand, also air-surveyed to take a stock of the flood situation and report back to him. A meeting of the Parliamentary Consultative Committee was fixed with the Union Home Minister, Y.B.Chavan, at Patna on October 10, 1968 and it was resolved that the state government would give topmost priority to relief and rehabilitation works in the areas hit by the unprecedented floods. Also, some senior officials were to ascertain the causes of the breach in the embankment and the central government would allot Rs. 10cr for the relief operations. The central government was also assigned to conduct an inquiry into the breach. The state was then under President's rule and there was no popular government. Hence these floods were not discussed in the Vidhan Sabha or the Vidhan Parishad.

Dr. K.L. Rao, the Union Irrigation Minister air-surveyed the flood hit area on October 11, 1968 and suggested that (1) The Kamla Balan embankment should be joined with the western Kosi embankment; (2) A 3m wide service road should be constructed on the countryside of the embankments to facilitate inspection; (3) Continuous watch should be kept on the embankments and they should be raised and strengthened wherever necessary; (4) A road should be built from Nirmali to the western Kosi embankment; (5) People living within the Kosi embankments should be moved out of that place; (6) A dredger should be procured immediately and (7) A bridge should be constructed on the Kamla Balan, below Nirmali, to access the western Kosi embankment.[15]

At the initiative of Dr. K.L. Rao, the Chief Engineer of the Central Water Commission, P.N. Kumra visited Jamalpur, on October 12th and 13th to inquire into the causes of the breach of the western Kosi embankment. He went to the barrage also and went round the entire length of the embankment. He reported, "There were a number of foxholes. Some holes of rats were also there. The foxholes were big. The embankments had clod as well and showed that it was not properly consolidated during construction. The embankments were not overtopped anywhere. Nor was there foundation failure as the embankment, near the ground

at the sites of the breaches was found to be quite good. The failure was due to piping through the embankment. The local people also stated that when the water rose very high, it started coming out on the countryside slope of the embankment through the fox-holes, and then the embankment sank and breached."[16] Kumra further wrote in his report that nobody expected floods in the month of October and hence there was some slackness in keeping a watch over the embankment. When the seepage started on the morning of October 6, 1968 the concerned assistant engineer was not there on duty and the overseers responsible for the upkeep of the embankment had also gone on leave. The rate of rise of the water was also rapid, and it rose to such heights for the first time since the completion of the embankments. All these factors aggravated the situation and piping developed into breaches very quickly.

However, P.N. Trivedi, the former Chief Engineer of Bihar and the Superintending Engineer in charge of the Jamalpur reach of the embankment in 1968, contended, "Kumra's statement is ridiculous that the water neither overtopped the embankment nor was there any damage to the foundation of the embankment. I had crossed these ditches, where the embankment had breached, so many times on boat and know what had happened there. This location was in my jurisdiction then."[17] Whatever the truth may be, the fact is that at the time P.N. Trivedi did not know what Kumra had written in his report. Further, whether the embankments had given way because of seepage or overtopping is also disputed. Keshav Kumar complained in his article 'Kosi Waters Overflowed Embankment' (*The Indian Nation*, Patna edition, October 13, 1968) that, 'But the basic fact that the river, for the first time overflowed its 24 feet high embankments at two points has, it seems, being (sic!) deliberately kept a guarded secret.'

Some trouble was also felt that year at the Birpur barrage on October 5th but the situation was brought under control before any damage could be caused. The river had mounted tremendous pressure at the 19th, 63rd to 65th, 92nd to 96th, and 105th km stretches of the eastern embankment but fortunately no untoward incident took place at these points.

In 1968 unprecedented rains occurred over West Bengal, Orissa, Assam and Bihar, resulting in huge losses to life and property. After sending Kumra to Jamalpur, Dr. K.L. Rao left for the USA to attend a seminar. H.N. Mukherji, MP, while talking about the insensitivity in official, administrative and political circles, expressed his anger and frustration in the Lok Sabha saying, "About the other levels, my honourable friend, the Minister, Dr. K.L. Rao, an engineer himself, he left for the United States, immediately after the deluge for attending a seminar. I am sorry to have to say that (the) knowledge acquired at this time of life is not going to be of much assistance to the cause of my country."[18]

It appears from the report of Kumra that he had finalized his report first and visited Jamalpur later. Wherever an embankment breaches, it deeply scours the base below and one cannot locate the foundation in such cases. It is virtually impossible that, at a discharge of 25,000cumecs in the river, the flood water would flow in a streamline fashion. It is also improbable that at a location like Jamalpur, the river had dried up on October 12th, the day of Kumra's visit. Kumra must have had an agenda, if not a mandate, to ensure that the people's faith in the embankments was not diminished at any cost and that no engineer was held responsible for the dereliction of his duties and inconvenienced unnecessarily. It is true, however, that an assistant engineer and two overseers were suspended for neglecting their duties. Kumra also must have been sure that his report would never be made public and it would be termed a secret document in the 'public interest'. Otherwise also, the Central Water Commission and the Water Resource Department of the state are invincible forts of secrecy. It is easier to milk a tigress than to get some information from these institutions.

Lok Sabha debates the breach

The 1968 failure of the Kosi embankment haunted politicians for a long time and angry protests were heard in the Lok Sabha. In reply to a question by Sushila Nayar, the Union Deputy Minister for Irrigation, Siddheshwar Prasad told the House, "The state government has suspended two overseers and work charge staff and are taking departmental action against them for neglect of duty. An inquiry is also being conducted by the state government."[19] Kameshwar Singh was, however, not satisfied with the reply of the minister and argued, "When the Kosi was flooded this year, a new theory was put forward that rats had dug holes into the body of the embankments. I must say that these were not holes dug by rats, it was negligence on the part of the government. Smaller rats, the like of overseers, have been suspended but no action has been taken against the bigger rats, the high officials who really swindle the money."[20] The government did not leave any stone unturned, Siddheshwar Prasad told Gunanand Thakur in the Lok Sabha, saying, "As the floodwater was rising, it was very difficult to get in touch with those living within the two embankments of the Kosi, especially, in the night. The river water was rising at such an alarming level that can be gauged from the fact that the discharge at the Barahkshetra site on October 4, 1968, at 12.00 hrs, was only 325,000 cusecs and rose to 913,000 cusecs in the early hours (01.00 hrs) of October 5, 1968."[21]

But the anger and frustration of Gunanand Thakur knew no bounds. He maintained that, "We have been living with the Kosi since times immemorial but are turned into Kosi sufferers by the grace of Dr. K.L. Rao. We do congratulate the government for the plans that were made for the Kosi but what about the people living in 300 villages that are trapped within the Kosi embankments, and are left to fend for themselves. I am really worried about them. Any democratically elected Government should be ashamed of such an unfortunate occurrence."[22]

Thakur's frustration was legitimate because he himself was a resident of a village trapped between the embankments. The rehabilitation of the displaced was moving at snail's speed and many families who had moved to the rehabilitation sites had returned back to their original villages. Their plight was that of one trapped between the devil and the deep waters. They went to the rehabilitation sites to escape the wrath of the Kosi, but could not adjust there because their fields were in the villages inside the embankments, forcing them to return to their villages. Governments become very polite at the time of disasters and it was due to this politeness that the causes of failure of the embankments were passed on to rats and foxes.

Gunanand Thakur did not spare Kumra's report. He said, "Many Members of Parliament have traveled to that area and have seen the devastation caused by the Kosi and Mr. Kumra goes there five days after the occurrence of the breach and reports that the entire plan fizzled out because of five holes of foxes. Now, look at the excuses. Hundreds of thousands strong population of Darbhanga was ruined and thousands of acres of crops were lost. The condition of the embankment became such just because of foxholes at five places."[23] He did not even spare Dr. K.L. Rao. Before embanking, the Kosi used to flow in various channels. Then it was not known which channel would become the main channel, but the river was not a 'killer' as it used to flow in so many streams. The embankments on the river imparted a 'killer instinct' to the Kosi. Thakur further said that, "There was a flow of 815,000 cusecs in 1954 in the Kosi and this year it was 913,000 cusecs. Now imagine, when the Kosi was not embanked, Darbhanga and Saharsa districts were devastated by it at a flow of 854,000 cusecs while this year, the flow was 9,13,000 cusecs and the river had a restrained width of flow of only 16 kilometers (because of the construction of the embankments) and what was the plight of the people living there? What is the guarantee that a flow of 1,000,000 cusecs will not hit the area again? Can Dr. Rao give such an undertaking?"[24]

A very sympathetic stance was taken by Jagannath Rao Joshi in this entire debate when he said, "The people of Bihar are distressed. They say, time and again, that if the Kosi had been flowing through any other state, it would have been tamed much before it started giving any trouble. Such a feeling that has gone into the minds of the people of Bihar should be removed. That is what I would expect from the government."[25]

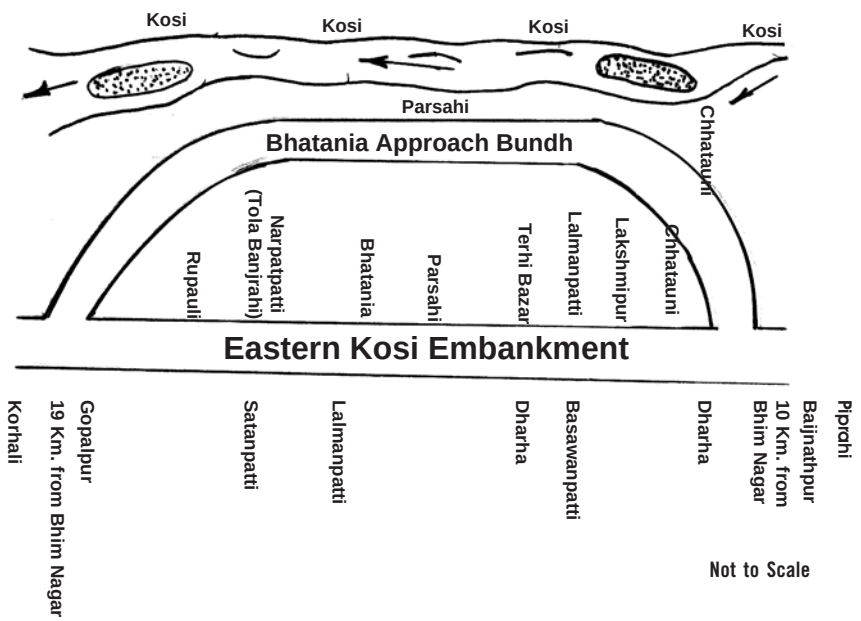
All the five breaches in the western Kosi embankment were plugged in 1969. The report of the enquiry instituted by the state government is not available anywhere. The floodwaters of the Kosi, used to make a u-turn beyond Ghonghepur, where the western embankment was terminated and left open-ended. This used to create prolonged flood conditions in Mahishi, Kusheshwar Asthan, Ghanshyampur and Singhia blocks. The 1968 floods compelled the residents of these blocks to put pressure on the government to intercept these backwaters of the Kosi and it responded promptly. It constructed a T-spur at the end point of the western embankment to check the backflow of the Kosi and it succeeded in intercepting the Kosi waters. But, the Kamla, which used to join the Kosi, on its own, was also intercepted and its flow was grossly retarded before it reached the Kosi because of this T-Spur. These blocks that were flooded hitherto by the backwaters of the Kosi were now getting flooded with the Kamla waters. The people, who used to face floods for four months earlier, were now facing floods for almost round the year. (See also Chapter 8 and Chapter 9).

4.4 Collapse of Bhatania Approach Bund (1971)

Although, the Kosi Project had taken up a scheme to rehabilitate those who had fallen within the two embankments of the Kosi, the residents of some villages in Basantpur block, now in Supaul district, from the 10th to 19thkm stretch on the eastern side, refused to leave their homes and hearths. These people did not want to leave their ancestral homes and landed properties. They demanded that a ring bund be constructed around their villages to protect them. Natthu Singh of Chhatauni and Jang Bahadur Singh of Terhi were providing the leadership. Both of them were influential leaders of their area and were very close to Lalit Narayan Mishra. This location was important because just outside the embankment, at Bhatania, is a village called Basawan Patti, which happens to be the ancestral village of Rajendra Mishra, Ravi Nandan Mishra, Lalit Narayan Mishra and Jagannath Mishra. Both Lalit Narayan Mishra and Jagannath Mishra later became ministers at the centre. Jagannath Mishra was thrice the Chief Minister of the state.

The construction of the eastern Kosi embankment in this reach was completed in 1956. A part of Bhatania

Fig 4.2 Location Map of Bhatania Approach Bundh



was located on the country side of this embankment, where British indigo planters used to live in the pre-independence days. The protesters had the advantage of proximity to Lalit Narayan Mishra and the scheme to construct the Bhatania Approach Bund was sanctioned by the Kosi Project without much difficulty, but it took a long time to start the construction.

In 1962, the Kosi started attacking the eastern embankment near the 20th-22nd km reach south of the barrage where a retired line had to be built to protect the main embankment which entrapped two villages, Gopalpur and Korhali of Bhaptiahi block, between the retired line and the main embankment. Subsequent to the construction of the retired line, the Kosi shifted its attack on the eastern Kosi embankment further north between the 17th and 18th km south of the barrage. This location was almost in the middle of the villages that were demanding ring bunds around them. Another retarded line was needed to protect the affected villages. As an extension to the second retired line, an approach bund was almost completed (Fig. 4.2) in 1968 and the villages of Rupauli, Banjrahi Tol of Narpat Patti, Parsahi, Bhatania, all of Terhi Bazar, Lalman Patti, Chhatauni and a part of Dharha were now located between the Bhatania Approach Bund and the eastern Kosi embankment apparently safe from the onslaughts of the Kosi.

In the statewide floods of 1971, erosion of the Bhatania Approach Bund began on August 12th, near the 10th km and in two days it eroded completely. Bhuwaneshwar Prasad Singh of Dharha recalls, "This approach bund was constructed on our demand because we did not want to go away from our ancestral village. The government had conceded our demand. Our land was very fertile and five maunds of paddy (about 200kg) used to be harvested per *kattha* (about 0.0067 ha) here and jute used to grow without any effort. A rabi crop was also assured without much inputs and so nobody wanted to leave the village.

In 1971, when the approach bund began to erode, we raised alarms but the Superintending Engineer posted here was a very easy going and aristocratic type of person. He kept telling us, 'Let us see!…I am coming' and so on and wasted much valuable time before reacting. The river that was eroding the spurs, slowly started to erode the approach bund. Fortunately, the junior staff was very active.

They even sacrificed two goats and continuously prayed to Mother Kosi to show kindness to us. The Superintending Engineer, however, remained indifferent and the approach bund gave way and the river water entered the villages. We moved on to the embankment with all our belongings and cattle. It took about two days for the approach bund to be completely eroded. The crops got submerged and the houses sank. Thousands of acres of our land were consumed by the river. We watched all this helplessly, sitting on the embankments. The Kosi did only one good thing; it spared the eastern Kosi embankment. Had the current been slightly swifter, it would have eroded the eastern embankment also because there were no protective structures, like spurs etc, built on that side. The Bhatania Approach Bund was not only protecting these villages, it was protecting the eastern embankment also.

The engineers had all kinds of problems with this bund. It was built because we wanted it built, not they. Till the time it survived, their chances of making a fast buck from repairs, etc. between the 10th and 20th km length were very remote. The waste of public money that took place elsewhere did not occur here. The engineers had their own vested interest in getting this bund breached

Bhuwaneshwar Prasad Singh

and they did not protect the bund and allowed it to breach."[26] All the villages were gradually evacuated and nobody lives there now. Spurs were constructed on the eastern embankment itself to protect it. Some people of Banjarahi and Rupauli stayed on in their original villages but later they too, shifted to the rehabilitation sites in Gopalpur and Narpat Patti.

P.N. Trivedi, the former Chief Engineer of Bihar, who is aware of this area and the incident, maintains that, "It is not fair to blame the Superintending Engineer like this. It is not necessary that his presence at the site would make much of a difference. After all, he was not relaxing at home. More likely, he was busy making arrangements for men and materials, being in the office. The problem is that in such emergencies the thinking of the villagers and pressures on the engineers to protect a structure, act in diametrically different directions. The engineers have to protect the structure and at the same time also face the anger of the public. No engineer likes the structure that he is assigned to protect to be destroyed just like that. After all, he is also responsible to some one."[27]

Amarendra Mishra, MLA, wrote to the Chairman of the Public Accounts Committee of the Bihar Vidhan Sabha, on January 15, 1974, to inquire into the causes of the breach. He charged the Kosi Project authorities with showing laxity in protecting the bund, which was the second line of defence for the embankment. He also claimed that the local people had informed the concerned overseers, Assistant Engineers, Executive Engineers and the Superintending Engineer, months in advance, about the possibility of a breach but nobody paid any attention to them.

The Public Accounts Committee took the matter seriously and looked into the following aspects of the request of Amarendra Mishra: (1) Did the department arrange for tackling the floods in 1971 according to the set procedures? (2) Were materials necessary for flood fighting at Bhatania stored at the site in advance? (3) Did the officials of the Kosi Project react to the information furnished by the people? (4) If answers to all the questions raised above were in the affirmative, who and in what proportion was responsible for the breach in the embankment?[28]

Members of the Public Accounts Committee, Satya Narayan Yadav, Ramashraya Rai (both MLAs), Jageshwar Mandal (MLC) and the Chief Engineer of the Public Works Department (Designs) toured the area on November 21, 1975. They talked to the common people and local leaders like Daman Narayan Singh, Dambar Narayan Singh, Tarini Prasad Dev, Sahdeo Jha, Markandey Jha, Baldeo Mahato, Ramji Goit and Bhuwaneshwar Prasad Singh. We have seen what Bhuwaneshwar Prasad Singh had to say. After talking to the local people, the Committee members talked to the officials of the Kosi Project and the government and found, based on departmental reports, correspondence and the reports of the experts, that the local officials had followed the provisions of the flood fighting rules but the opinion of the local public was just the opposite. The Committee found that at the 10thkm of the eastern Kosi embankment, some 200,000 bricks, 40,000cu ft. boulders/stones, crates, bamboo and the other building materials were available. Besides, according to the account books of the Kosi Project, during March to May 1971, a sum of Rs. 15,705.00 had been spent at the Bhatania site. In July 1971, the expenditure was Rs. 262,530.00 and up to August 12th, the expense in August was Rs. 57,353.00. It could not understand that when so much material was available at the site, why so much more money was spent there. It also felt that it was very difficult to ascertain after a lapse of five years whether that much more money had been actually spent or not.[29]

The Committee agreed that the people at Bhatania were more alert than the officials of the Project because they kept attracting the attention of the government towards the impending dangers through newspapers, magazines and other available sources. It maintained that, "The department can be charged as guilty of not taking the complaints of the people seriously and necessary directives were not given to the local authorities from the higher ups."[30]

The Committee also found that heavy expenses were incurred after the breach of the Bhatania approach bund, as shown below:

1972-73	Rs. 3,976,081.50
1973-74	Rs. 8,861,572.08
1974-75	Rs. 9,201,490.38
1975-76	Rs. 6,601,322.10
Total	**Rs. 28,640,466.06**

Thus, while the total expenditure on the construction of the Bhatania approach bund was only Rs. 316,887, repairs that followed the 1971 breach cost Rs. 2.86cr.[31]

Amarendra Mishra explained, "The people of the Bhatania group of villages were compelled to come out of their villages after the breach of the approach bund. This entire area suffers from seepage. It is the same condition, from Bhimnagar to Salkhua and this is a big problem. It is for such things that the Kosi Pirit Vikas Pradhikar was started but, unfortunately, it is an inactive institution. When I was the PWD Minister in the state in the 1980s, I had constructed two roads for these people, one that joined Simrahi to Bhatania and Narpatpatti and the other joining Birpur to Bihpur, a 10km long *pucca* road. These are the only works done

there but I must tell you, the situation there is really bad."[32]

Following the 1971 breach of the bund at Bhatania, a retired line through the countryside of the eastern embankment was proposed between the 10 and 20km stretch. This retired line could act as a second line of defence in case of a breach in the main Kosi embankment. But most of the land of Dharha, Piprahi, Basawan Patti, Lalman Patti, Baidyanathpur, Rajpur, Narpat Patti and Satan Patti would then be trapped between it and the main embankment. Lands of these villages were already acquired for various other structures like the main embankment, the Bhatania Approach Bund, the Supaul Branch Canal and the escape channel, etc. The remaining land would go to the retired line. Hence the villagers opposed the proposal and insisted on the reconstruction of the Approach Bund. But that land was now occupied by the Kosi River. Thus, no work was done and the people remained where they were.[33]

4.5 Bahuarawa Breach in the Eastern Kosi Embankment (1980)

The eastern Kosi embankment is 126km long and joins the Mansi-Saharsa rail line near Koparia railway station. In 1979, the Kosi came very close to the embankment in the 121 to 123km stretch. The embankment in this reach was highly vulnerable to attacks by the river. Consequently it was provided with a large number of spurs. The main spur was located at 121.2km and was 396m long. There were other spurs also at 121.4km (121m long), 121.5km (111m), 121.6km (84m), 121.67km (52m), 121.8km (224m), 121.90km (39m), 122km (60m) and the last spur was built at 122.4km. All these structures were located south of the Khagna sluice and north of the Situaha sluice. There used to be a big *pipal* tree on the spur at 122.4km and it was the first spur to be attacked by the river in 1979. The river kept eroding away these spurs and in 1980 the pressure was being felt on the main spur at 121.2km length.

The Kosi And The Pipal Tree - Photo Courtesy Rejendra Upadhyaya

When the situation became grave, an SDO informed the Executive Engineer, by a letter (No 456, dated June 7, 1980) that, "The position of the reach of the embankment between 121-122 kilometers has become very critical. Specially, at 121.25 kilometer, the river has become perpendicular to the embankment and at 121.70 km, the river is only 12-15 meters away from the embankment. The resulting situation is precarious and the embankment has become highly vulnerable. Therefore, protective works are needed for the embankments on an emergent basis." Thus a massive programme to save the embankments was begun to prevent any attack of the river from further damaging them.

Rajendra Upadhyaya, a former Superintending Engineer of the Irrigation Department, was the Executive Engineer there and was responsible for maintaining the embankment. Says Upadhyaya, "This spur at 121.25km, where the river was hitting directly, was crucial and a prestige point for the department. If anything went wrong at this point, we would all cut a sorry figure. These spurs were the soul of the embankment. We worked very hard for about two months to save the embankment and even invited engineers from the railways and the army for help. They were, however, of the opinion that we were doing the right thing and their help would not be of much use to us. Having said so, they left. We followed the instructions of Dr. K.L. Rao and dumped loose boulders and sand bags in the river where it was eroding the banks but without any success. The river started flowing along the embankment, between 121.60 and 122km, in August and consumed it on August 8, 1980. We then tried hard to ensure that the gap did not widen but failed there too. The embankment breached over a length of about a kilometer and we were compelled to build a retired line. The only consolation was that the level of the land in the countryside was higher than the water level of the river. As the embankment breached, water from the countryside started going to the river and the waterlogging there got cleared. Thus there was no damage to life and property or for that matter, the crops. Had the level outside been lower, the river water would have rushed outside causing immense damage there.

Rajendra Upadhyaya

Our main problem was that boulders could not reach the site. They used to come by train to Koparia railway station which was about 4km from the site and was connected by the embankment. The embankment was weak and the road connection was awful. Tractor trolleys were deployed to transport boulders to the worksite. Should one tractor get stuck somewhere, a long queue would form in no time. We kept waiting for the boulders at the worksite that never reached us. If the boulders were brought by train, it had to change from broad gauge to meter gauge at Barauni, which was a time consuming process and if these were brought by boats through the Kosi-Ganga route, they ran the risk of capsizing any moment.

These are all the problems one has to face while dealing with a river like the Kosi. The problem is similar when one has to face the inquiry commissions, public petitions, scrutiny and suspensions, etc. after the work is over. This is all a part of the game. In this case also, an inquiry was held in 1984 when most of the works were over and the retired line was also complete. The charge on me was that there was embezzlement of funds in the purchase and carriage of the boulders. Now, can you imagine what would be the impact of an inquiry on the morale of the army if a commission is appointed to look into the consumption of arms and ammunition after the war is over? The situation is almost similar when the river is bent upon breaching the embankment, on one hand, and the question of safety of life and property stares at you on the other. Mr. Abdus Samad, Chief Engineer, conducted the inquiry against me and had given a clean chit. One can only admire the wisdom of those who want an inquiry held on the conduct of persons working in an emergency situation.'[34]

P. N. Trivedi, the former Chief Engineer of Bihar, further clarifies this point saying, "Have you ever heard of an inquiry being conducted into the death of a soldier on the front. Everybody knows that he is there to sacrifice his life so that we all can live in peace. The situation is the same with the spurs. They are built to protect the embankments and may get eroded in the process. We protect the embankments during the rainy season when you cannot see eye to eye with the river and it is the engineers who risk their own lives to save people from the onslaughts of the river. Nobody comes to help us then, but after the floods are over everybody turns up to interpret things in one's own way. If one starts bothering about such people then flood control would always remain a dream."[35]

The next part of the breach story is narrated by Uday Kumar Singh, *mukhiya* of Bahuarwa village. (See Box: One Becomes A Pauper In No Time).

One Becomes a Pauper in No Time

Uday Kumar Singh was the *mukhiya* of Bahuarwa village in 1980. He says, "That time the discharge in the river was on the decline. There was an undercurrent of fear in everybody's mind when we were working on preventing the erosion. Rajendra Upadhyaya really worked very hard and with all his might. His famous saying that 'We are trying our best to check the erosion but let us see what is His wish' became headlines in the newspapers. The water level in the countryside was higher and hence when the embankment breached, the floodwaters started going into the river but despite this, the erosion continued. My village was eroded in 1981 and my house, which was only two years old, simply sank. We were a bit active and could manage some relief, boats and protection. I was the *mukhiya* and that might have helped a bit. The retired line was built and our village was trapped between it and the embankment.

A piece of land measuring 13.81ha was acquired to rehabilitate us. Our village was quite big and was scattered over four kilometers, from 120km to 124km. The land that was acquired for us was quite low and we wanted it to be filled before being handed over to us. This was the beginning of our struggle. At least three times, the Technical Advisory Committee (TAC) visited our village and the third one recommended filling of the acquired land at an estimated cost of Rs. 40 lakhs but only Rs. 10 lakhs were sanctioned against this. The ditch was about 1.5m deep and with the money available, only one fourth of it could be filled. The rest remained as it is. Now, our village was located outside the embankment and our farm land was within the embankments. Slowly, this land became useless and unfertile. There is no other means of livelihood and the only way out is to migrate to Delhi and Punjab. There the wages are a bit better and one can save something. These savings are now being utilized in filling the land and building the houses.

We left no stone unturned. We wrote to the Demands Committee of the Bihar Vidhan Parishad. Debates were held, decisions were taken but no action was taken on the ground. In this very house of mine, I have entertained the Chief Minister, a former Chief Minister, the Water Resources Minister and scores of Chief Engineers. We did all that we could do to keep them in good humour but barring their visits, we did not get anything in return. We did not even get compensation for the land that was taken away, twenty years ago from us, to construct the retired line spurs. Life in this Kosi belt is full of struggles and one becomes a pauper in no time."[36]

4.6 Breach of the Eastern Kosi Embankment at Navhatta (1984)

The year 1984 was a bad one as far as floods were concerned. At the national level, terrorists breached the Bhakra canals and in Bihar, large-scale breaches occurred in the embankments of the Gandak, Burhi Gandak, Bagmati, Kamla and the Mahananda. The eastern embankment of the Kosi was under threat from the river downstream from Navhatta since 1979, in the 81-83km stretch. But in June 1984 it also threatened the 72-73km reach. This, however, was promptly repaired. In July, the river once again became active near the 81-83km stretch but prompt anti-erosion works solved the problem. No sooner was this work completed, the river opened another front in the 70-72km reach in the month of August. At the beginning of the month the river was about a kilometer away from the embankment but just towards the end of August, it came very close to the embankment near the 71stkm and fully eroded the spur there. With the resistance withdrawn, it now directly attacked the embankment. The river was tightening its noose over the embankment on one hand and the rains were preventing any protective measures from being taken on the other. Not only was the embankment in a dilapidated condition, but all the approaches leading to it were also in a similar state of disrepair. Boulders in large quantities were needed to protect the embankment but the trucks found it very difficult to reach there.

As if that were not sufficient, non-gazetted employees of the state went on an indefinite strike from September 4, 1984 and that meant that the services of overseers and drivers of the department were also not available. Jagadish Pandey, a former Chief Engineer of Bihar and then an Executive Engineer at Navhatta, says, "This strike crippled us. There was no other work going on anywhere and the strikers were eyeing the Kosi Project. They wanted to ensure that no work was carried out here. They used all possible tactics to thwart work. Despite all our efforts, the embankment gave way on the night of September

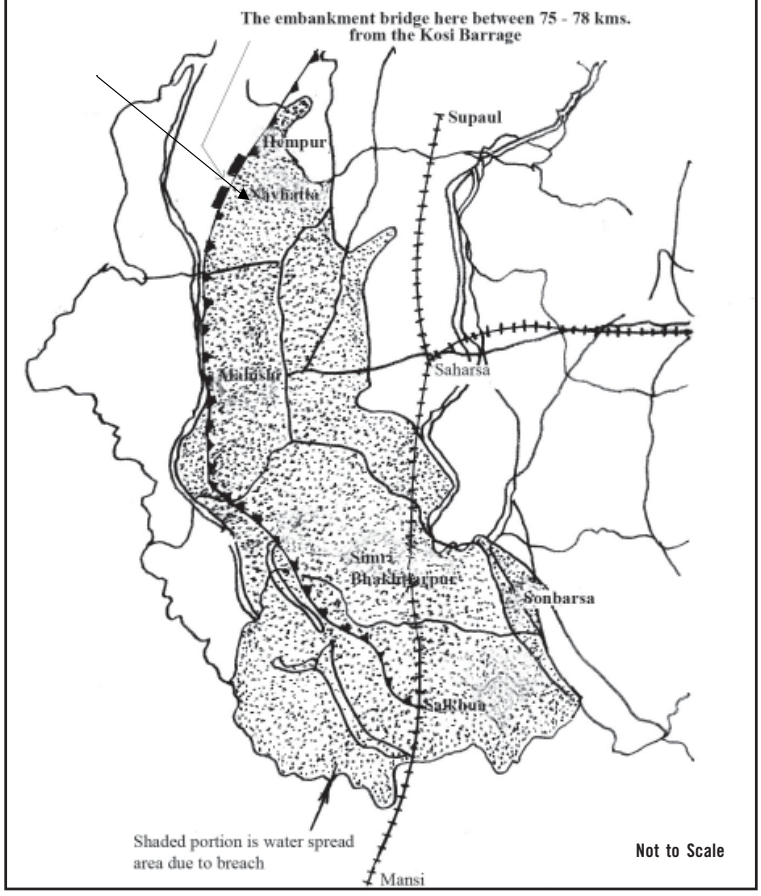
5th at 2100hrs. In fact, senior officials of the department had visited the site in July and we had indicated our problems to them, that in the absence of a good road we were facing a lot of difficulty in transporting building materials. Thus, to be on the safe side, if it was not possible to make a *pucca* road, then at least an 8 inches brick soling could be provided so that the materials could reach a reasonable distance from the worksite. This, however, was not sanctioned. If we had had free access to the places where these materials were so badly needed, we could have averted the accident."[37]

Jagadish Pandey

In fact, the eastern embankment of the Kosi was vulnerable to attacks of the river since July. The Aryawarta, in its editorial of July 5, 1984 had warned that, "The Kosi embankments, specially the eastern Kosi embankment, are always subject to the threats of breaching because of the maneuvering of the transfers and postings of the engineers. We have seen the devastation caused by the breaches in the embankments of the Gandak and the Mahananda recently. One can only imagine the deluge and devastation that would be caused if there were a breach in the Kosi embankment. There are, at least, half a dozen vulnerable points on the eastern Kosi embankment at the moment, and if proper precautionary measures are not taken, an untoward incident may take place any moment at these points."

That the embankment was in a precarious state was established towards the end of August. The residents of Hempur sent an SOS message to the district authorities. The requests slowly changed into anger and later into a riot-like situation. The administration, just because it understands the language of agitation more easily than that of persuasion and requests, reached Navhatta and Hempur on September 4th to review the situation. The District Magistrate, instead of going back to Saharsa from Hempur left for Patna. The Divisional Commissioner, Jiya Lal Arya informed the Minister of Revenue, Lahtan Chaudhary, about the impending danger. The place where the embankment was likely to breach was located in his constituency. Both of them toured the area on September 5th and before they could complete the formality, three fourth of the embankment had already eroded. The District Magistrate returned to Saharsa on September 6th. By then the river had completed its job and the embankment was washed away in the 75-78 km stretch (Fig. 4.3).

Fig 4.3 Water-spread area due to the breach near Hempur (1984)



After the embankment had breached, it was revealed that the Kosi Control Board had recommended in its meeting of March 13, 1984 that it should be repaired and strengthened thoroughly in view of the safety and security of 500,000 people of Saharsa. The Board had allocated a sum of Rs. 5cr for this work and issued a caution that the suggested works should be completed on a war footing. Nothing, however, was done between, March 13th and 2nd September.

The eastern embankment of the Kosi breached near Hempur in Navhatta block of Saharsa district on September 5, 1984 75km from the Bhimnagar barrage. The villages just outside the embankment breach, namely Kedli Punarwas, Purushottampur, Goar Para, and Naulakha Punarwas were washed away. As the river water came out of the embankment, it split into four different streams and all these streams converged once again near Teghra, in Mahishi block, 17km from Hempur, wiping out

Teghra. The floodwater then slowly spread over the Navhatta, Mahishi, Simri Bakhtiyarpur, Salkhua and Kahara blocks. The backwaters of the Kosi engulfed some villages in Supaul district too. The river was now flowing not only within the embankments but also outside them. Only a narrow strip of the embankment could be seen above the water level. The water spread of the Kosi due to this breach is shown in Fig-4.3. The only consolation was that the people who were hit by the water surges had some inkling of the events to come and had prepared themselves to face the eventuality. They had not, however, faced such a deluge for a long time, since 1959 after the completion of the Kosi embankment and so they were greatly inconvenienced.

Many people left their homes in panic for Saharsa and a significant number took shelter on the Saharsa-Mansi rail line. A good number of people underestimated the magnitude of the disaster and left their homes with the hope that they would return after a few hours. They even left their cattle tied to the pegs. But that was never to be; it took them months to come back to their homes. Their cattle died as they could not escape and nothing was left of the property that had been abandoned. Most people rushed to the eastern embankment itself as the remaining embankment was the only high land available in the vicinity for shelter. Village after village settled on it with river water on either side. Rain added to the misery of the people. Houses were built on the crest of the embankment with all sorts of imaginative building materials that included bamboo, paddy straw, *sarees*, palm leaves, plastic sheets, tarpaulins, *chowkis,* almirahs and cots, etc. Those who could bring their *chowkis* or *charpoys* (cots) to the embankment built double storied shelters because one could sleep over them as well as underneath. Cattle were kept on the slopes of the embankment that were also utilized for defecation and as a playing field for the children. Around 450,000 people stayed on the embankment and most of them spent almost six months in that state. The government reported only 35 casualties in Saharsa while unofficial sources said that this could be anywhere around 200. The death toll could have been much more but the people had prepared themselves for the breach and managed to wade through the crisis. Pulindra Narayan Singh of Hempur village gives a graphic account of the Navhatta breach. (See Box: Bamboos And The Goddess Bhagwati Save Hempur)

The government distributed wheat as relief to the embankment victims at the rate of 2.5 kg per adult per week. But the supply was never regular. Children below nine years were entitled to half the amount. Hand pumps were provided on the slopes of the embankment for drinking water. Whatever land was available, it was only on these slopes and it did not take much time for it to become filthy. After a week or so it was a hell on earth.

Grains were arranged somehow but the real crisis was that of fuel. For some days and for some adventurous people, floating roofs in the river water served as fuel but the sustaining source was *Karmi* (A. Forsk – Ipomoea.), an aquatic weed. Its leaves were boiled and utilized for food and the dried stems were used as fuel. In normal years, nobody bothers about this weed. Food was also scarce for the cattle because no fodder could reach Saharsa as it was not easily accessible. The cattle had to be fed with water hyacinth and they were not used to eating it. It led to many diseases. Most cattle died because of fodder scarcity and by eating inedible food. Availability of safe drinking water and medicines became a constant problem.

Children and women were the most inconvenienced lot. The children had no space left to play and any laxity about their whereabouts could be fatal because there was water everywhere. There was no privacy for women going about their daily ablutions. They had to go out on boats for defecation in water, before dawn and after sunset, as no dry land was available anywhere for the purpose. One can only imagine the hardship that would haunt them in case of childbirth. The situation deteriorated further during the winter as the mercury dipped. With water everywhere, it was unusually cold on the embankment and there were no arrangements to combat it. Mattresses, blankets, bed sheets and bed covers had been all swept away in the floodwaters and no wood was available for warmth. The embankments were quite active during winter as people hardly slept due to the cold. Some fortunate people, however, received blankets in doles from some voluntary organizations.

Most of the wooden bridges in the areas were swept away or destroyed beyond repairs. The so-called 'developed network of roads' was smashed into smithereens and for all practical purposes, the eastern embankment of the Kosi did not exist beyond the 75thkm distance from the Bhimnagar barrage. The Mansi-Saharsa rail line was washed away between Koparia and Simri Bakhtiyarpur. Rail services could be resumed only in December after the necessary repairs were carried out.

Agriculture, the main occupation of the people, was destroyed because the kharif crop drowned and there was no possibility of a rabi crop either as the floodwater could not be drained out or dried before the sowing season. Big farmers managed to wade through the crisis with the help of friends and relatives but small and marginal farmers and the landless were in trouble because there was no possibility of getting any

Bamboos and The Goddess Bhagwati Save Hempur

"The embankment had been eroding near our village for the past two years but accidents were successfully averted. Madan Mohan Jha was the Collector here in 1983. He was a very upright person and no-nonsense administrator. He himself put on a *lungi*, got into the river and motivated all others to follow him. Erosion had begun along nearly one-and-a-half kilometers, but he saved the embankment from breaching. He dumped trunks, trees, bamboo, bricks, wood and stones to prevent further erosion. He told the engineers that he would put them behind the bars if the embankment breached.

In August 1984 the Kosi came very close to the embankment near Hempur. Lakshmi Prasad Singh was the Collector and Lahtan Chaudhary was the Minister. Non-gazetted employees of the Kosi Project were on strike. Whatever might have happened on paper, nothing happened on the ground to save the embankment from breaching. When more than half the embankment had eroded, poor families in the village shifted on to the embankment. The Rajputs and the Brahmins had properties so they chose to stay back in the village. The embankment gave way in the morning of September 5th. Kedli village, where it breached, was located inside the embankments and outside it, on the east was the rehabilitation plot of the same village. Thousands of people, mostly Yadavs, lived in this village. It was a very dense settlement with a rice mill. The people were rich and a couple of them had elephants with them. Within a minute, all this was wiped out.

Our village Hempur was an extension of the Kedli resettlement site. There was a shield of a thick bamboo plantation and an orchard between the embankment and Hempur. All the debris of Kedli got stuck in the bamboo clumps and the orchard. The walls and roofs of the houses, wood, tools and equipments of the rice mill, elephants, cows, bullocks and goats, all got stuck in the trees. Before the water could attack our village, it got diverted toward the south. Only filtered water through the orchard fencing reached our village and that too, very slowly. But for these bamboos and the blessings of Goddess Bhagwati, I would not have survived to talk to you. Our village would have been swept away, not submerged. South of our village was the Naulakha rehabilitation site and around 10,000 people, mostly Muslims, lived there. A three meter thick bed of sand was deposited there. You can well imagine the depth of water that may have passed through this place. Naulakha was very close to the embankment and hence these people had shifted there and no lives were lost. Our village faced only 1 to 1.5 m deep water but the sand that was left behind completely destroyed our orchards and plantations.

When the retired line was completed and the breach was plugged, the lands of five revenue villages, Hempur, Dharam Pur, Trikhutti, Chatra and Goar Para were trapped within. Our problem was that the lands of Hempur and Dharampur were already acquired for rehabilitating evacuees from Purushottampur, Kedli and Bariyahi. Some of our land was lost in the alignment of the embankment and the retired line. Having lost so much of land already, we were told by the Additional Collector that he needed 30 to 40ha more to rehabilitate those falling between the old embankment and the retired line. We vehemently opposed this move and demanded compensation for the losses that we had suffered due to the breach of the embankment, instead. Peace then returned to our village.

After the present government took over in 1990, not a single basket of earth has been placed on this embankment and the 1984 episode may be repeated any moment."

— Narrated by Pulindra Narayan Singh,
Hempur village, Navhatta block, Saharsa district.

employment before the next monsoon crop. This led to a mass exodus of labourers from the area to places like Nepal, Delhi, Punjab, Haryana and Kolkata, etc. Migration in search of employment was not a new phenomenon for the people of this area but it started early and on a mass scale in 1984. The losses that were incurred due to this breach are given in Table 4.1

Even as the people lost all their material possessions in this tragedy and were reduced to paupers, a blame-fixing drama was being enacted elsewhere. The crisis in the 75-78km stretch on the eastern embankment had been brewing since May 1984 and some protective works were begun then. The Engineer-in-Chief of the Irrigation Department had visited the location for inspection but he did not say categorically that the embankment was vulnerable. There was a difference of opinion on the time of the breach. Some people believed that the embankment had breached on the night of September 5, 1984 — what Jagadish Pandey had said earlier — while official sources set it on the

Table 4.1: Impact of the Navhatta Breach (1984)

Sub Division	Block	Affected Gram Panchayats			Affected Villages	Affected Area Hectares	Affected Population
		Fully	Partly	Total			
Saharsa	Navhatta	9	2	11	28	12,314.95	60,000
	Mahishi	6	3	9	25	9251.09	45,773
	Simri						
	Bakhtiyarpur	19	2	21	53	15,922.11	1,15,000
	Salkhua	17	-	17	43	16,858.37	92,019
	Sonbarsa	7	2	9	22	1,120.00	42,251
	Kahara	15	6	21	15*	11,691.82	83,302
	Supaul	4	4	8	10	N.A.	20,020
	Total	**77**	**19**	**96**	**196**	**66,958.34**	**458,365**

** This number is an under-estimate. Source: Office of the Collector, Saharsa*

evening of September 6th. The gap was necessary to avoid being held responsible. No senior official was present at the district headquarter and the people were left to fend for themselves.

The mud slinging that is so common to such tragedies started almost immediately. It is reported that the Minister for Relief and Rehabilitation resigned from his post owning responsibility for the disaster and slackness in the relief and rescue operations but withdrew it later. An Inquiry Committee was also appointed to look into the causes of the breach. It charged some engineers with dereliction of duties and willfully delaying the repair process despite allocation of funds and recommended their suspension. The Engineer-in-Chief was also charged with misleading the administration about the safety of the embankment. It was his turn now to resign and subsequently withdraw the resignation. The engineers threatened to go on strike over the suspension issue and that too was subsequently withdrawn. The drama of instituting an inquiry, suspensions, resignations, threatening calls for strikes and their withdrawals continued at different stages till 1985. New floods that year wiped out all memories of the past and the tragedy was forgotten.

There was a furor over the payment of Rs. 51 lakh to various contractors just a few days before the breach. Some of them were reportedly relatives of powerful politicians of the area and the engineers of the Kosi Project. This was a hotly debated issue in those days. The engineers too, dug out many old reports in their defence wherein it was said that the embankments were not the final solution to floods and had raised doubts over their efficacy.

There was an attempt to explain to the people that the effective life span of the embankments was only 25 years and that was over. Newspapers that were so vocal in the 1970s about the construction of the Barahkshetra Dam and the dwindling life of the embankments were curiously silent over the issue. The engineers never talked publicly about the Barahkshetra Dam and not a single engineer resigned because he could not maintain the embankments whose life was over or unless the Barahkshetra Dam was built, as recommended by the Kosi Advisory Board in 1974, the flood problem could not be solved and that top priority should be accorded to this project.

In March 1985 the Navhatta breach was plugged with the help of a retired line costing Rs. 8 cr. to the exchequer and people returned to their villages. The entire episode was forgotten. Some people received some money to repair their houses but that assistance was just a drop in the bucket.

Karpoori Thakur, a former Chief Minister of Bihar, raised the issue of the breach in the eastern Kosi embankment in the Bihar Vidhan Sabha on September 10, 1984 during the zero hour and said that, "I am pained to say that after reminding the officers time and again, this small repair work of the embankment was not done. The result is that the embankment has breached between 75 to 78 km and almost all of Saharsa district is under a sheet of water. The situation is horrifying there and the district administration or the engineers of the Irrigation Department have not done what they should have done in the situation. Rome was burning and Nero was playing his flute and this is what this Government is doing. This government has lost its credibility to rule the state."[38] The request for a statement by the government was turned down by the chair but the debate was resumed on September 13th.

Jay Prakash Yadav made a scathing attack on the government in view of the Saharsa tragedy and said, "The people of Saharsa today are crying for help for a match-box, some candles, bleaching powder, medicines and food and the Minister from that place is playing with the sentiments of the people. I want to

tell the Minister that you are responsible for what has happened there. You should resign but you are a thick skinned person, your resignation has got no meaning.... Apologizing alone will not help the people."[39]

'Give me plans and I will give you results' - Engineer Disgusting Parody

Amarendra Mishra, MLA, charged the government of his own party that 500,000 persons of six blocks in Saharsa district had been affected by the breach and they were not given even a tarpaulin roof after a lapse of 10 days. Some food packets had been air-dropped but no boats were deployed. He maintained that negligence in the repair works had led to this tragedy. The officers were slack and there had been large-scale bungling in the provision of boulders. He demanded stringent punishment for the errant officials. Vishwa Nath Gurmaita, MLA, told the Vidhan Sabha that the incident occurred because all the gates of the barrage were opened simultaneously. The striking workers had left the keys behind and the SDO got all the gates opened. He charged the Superintending Engineer of making a payment of Rs. 51 lakhs to contractors on September 3rd and then going on leave, on the pretext of ill-health. The embankment breached on September 5th, he claimed.

Jagannath Mishra, another former Chief Minister of Bihar, who had somehow managed to reach Saharsa, charged his own party government that, "Nobody from the government has gone to Saharsa so far. If the people in Saharsa are surviving, they must be saying that we are engulfed in water since ten days and nobody is there to think about us. This is quite worrisome. I will suggest that we must try to look after those surviving there. We must try to save them, whether by boats or a helicopter... The flood in Saharsa is not a flood, this is unprecedented... we cannot call it a flood, it is a deluge."[40] Ganesh Prasad Yadav wanted that an announcement to suspend the Collector of Saharsa be made on the floor of the House, "How dare the Collector tell the Relief Minister that you should not talk rubbish to me."[41]

The Revenue Minister, Lahtan Chaudhary, took a defensive stance and said that, "(Some) people have not been given relief. This is not because of inefficiency but because of the situation and I have apologized for that."[42]

The next day, on September 14, 1984 Krishnanand Jha gave a statement on the breach of the Kosi embankment in the Vidhan Sabha, on behalf of the government. He said that the Kosi suddenly changed its course and came very close to the embankment between the 75.60 and 75.90km stretch on September 3, 1984 and erosion started there. The Chief Engineer arrived from Purnea at 9 PM on the night of September 4th and anti-erosion works were begun under his supervision. The Commissioner of Saharsa, the Relief Commissioner of the State, the Revenue Minister and the Chief Engineer of the Irrigation Department had inspected the erosion site in the forenoon of September 5th but heavy rains began in the afternoon, preventing the supply of boulders to the worksite. The administration was informed of this development and the embankment gave way at 0445 hours on September 6th and the floodwaters started flowing towards the countryside. The water once again cut the eastern Kosi embankment on September 8, 1984 near Koparia to rejoin the river. He assured the house of a probe into the breach and informed the members that the charge of paying Rs. 75 lakhs to the contractors was baseless and no such payment had been made to anybody.[43]

As far as the payments made to the contractors is concerned, many newspapers made an allegation that the High Level Technical Committee had found in December 1983 that the embankment was vulnerable between 58 to 77kms. The Kosi Control Board had recommended a sum of Rs. 5cr for the repairs but sanctioned only Rs. 1.34cr. Orders were issued to procure 52,000 tons of boulders and on September 1, 1984, the last installment of payment against the repair works was made (vide letter no: 3225). All the works that had to be done between 76 and 77.50kms were completed during September 2 to 4, 1984 and this was also paid for. Some of the payments made during this

period are listed below.[44]

1.	Maruti Mining Corporation	Rs. 348,155/-
2.	L.D.Company	Rs. 450,459/-
3.	North Bihar Construction Company	Rs. 583,560/-
4.	Thakur and Company	Rs. 105,431/-
5.	Royal Brothers	Rs. 436,125/-
6.	K. N. Jha	Rs. 135,154/-
7.	Ramji Raut	Rs. 140,467/-
8.	Tufail Ahmad	Rs. 143,105/-
9.	Badari Prasad	Rs. 115,019/-
10.	Mohan Mandal	Rs. 207,572/-
11.	Nageshwar Singh and Ranjan Singh	Rs. 333,659/-
12.	Hariram Singh	Rs. 475,023/-
13.	Indra N. Singh	Rs. 303,651/-
14.	Bindeshwari Singh	Rs. 339,918/-
15.	Rajeshwar	Rs. 275,987/-
16.	Rajesh Kumar Singh	Rs. 111,056/-
	Total	**Rs. 4,504,341/-**

With the breach in the embankment, all the evidence of the works — whether done or not, was destroyed and curtains were drawn on this act of the drama. Jagadish Pandey defended the payments made to the contractors and said, "The payments to the contractors were due since 1983 and some payment was due for the work done in the month of June 1984. When an emergency situation developed at the embankment, the contractors also started showing their colours. All the staff here, whether the Executive Engineer, the Superintending Engineer or even the Chief Engineer were new. Almost everybody had joined around April 1984. The contractors *gheraoed* the SDO for payments. They *gheraoed* us also, when we tried to intervene. We demanded a time of two months from them to clear all the payments. Though they did not agree, their attitude softened a bit. We decided later that all the relevant engineers should use their disbursing powers to make payments to the contractors so that the work does not suffer." He further added, "After the embankments were breached, we had to listen to all sorts of things from all sorts of people. Krishnanand Jha issued a statement of suspension of the engineers, which upset the Engineer–in–Chief, Nilendu Sanyal, very much and he offered to resign but he did not do that."[45]

'Welcome to channel A-A' One should have been ashamed of the breach instead

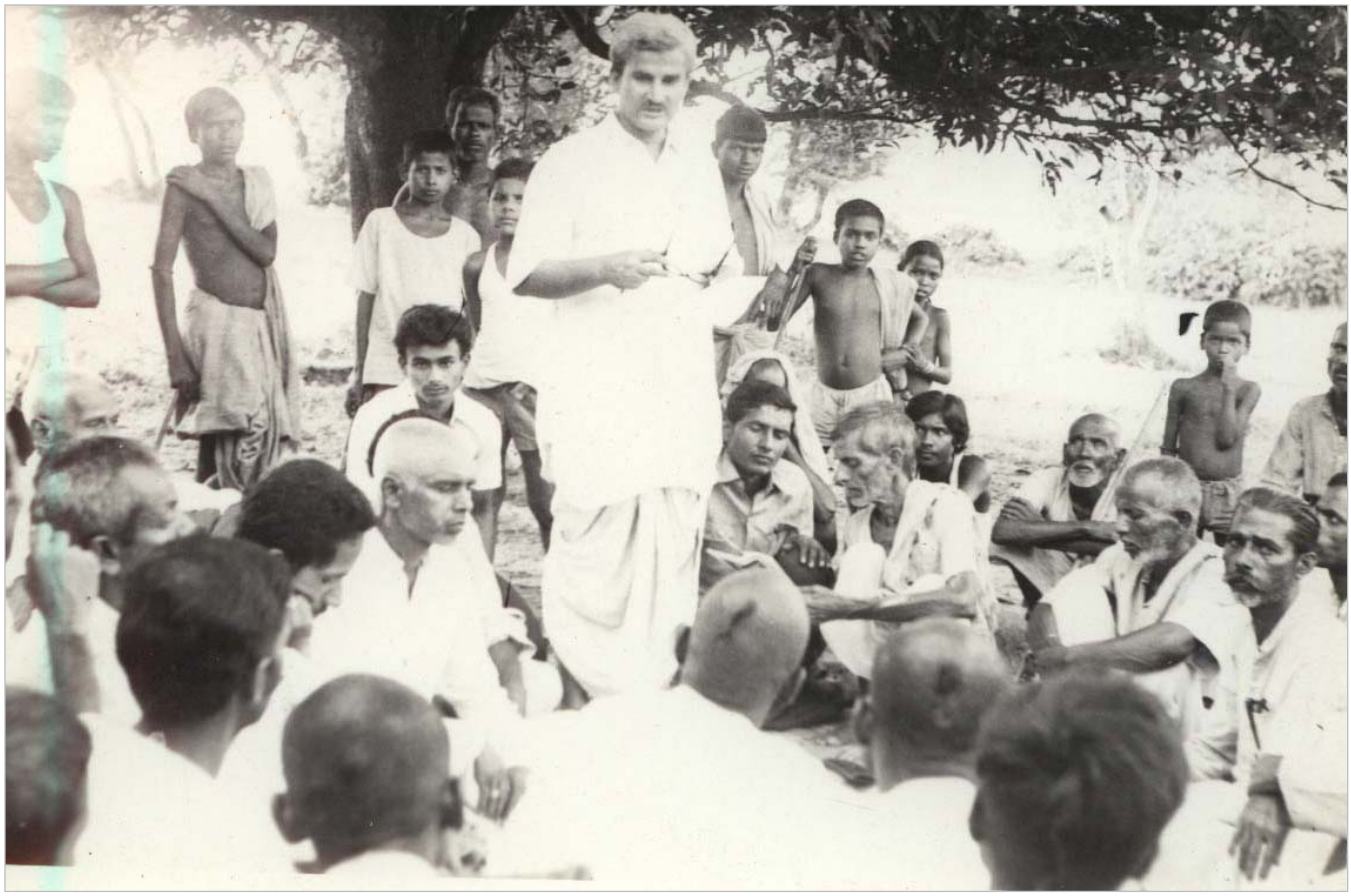
The public, however, was of the opinion that in the event of the breach, the payments that were to be made to the contractors and the agencies be held up and they be black-listed The payments were made even though the people felt that even if a fraction of the initiative that was taken in making payments to the contractors was shown in procuring materials and saving the embankment, the tragedy could have been averted.

Compensation Instead of Relief

It took quite some time for the government to initiate relief operations because the inundated area was inaccessible. The current was so swift and the water spread so large, that no contact could be established for a long time.

No relief of any kind was available to the breach victims till the eighth day of the disaster. Whatever help was available, came through friends and relatives or through organizations like the Marwari Yuwa Manch or the Rashtriya Swayam Sewak Sangh (RSS). Official apathy to the problems faced by the people, laxity in the maintenance of the embankments and corruption, bred dissension in the minds of the people and they were compelled to organize themselves against the government. Shivanand Bhai, his wife Sarala Bahan, Amarnath Bhai, Tapeshwar Bhai, Rajendra Jha, Rajendra Yadav, Satya Narayan Prasad and Kamla Bahan of Sarvodaya provided the leadership. They had the support of Prem Bhai of Banwasi Sewa Ashram in Mirzapur (U.P.). It was resolved that it was the duty of the government to protect the embankments, which it failed to perform. Therefore instead of accepting the doles given by the government, it was the people's right to claim compensation for the losses incurred by them because this was not a natural flood, it was a man-made flood. In this case, the people also knew the men responsible for it.

People were organized and over 20,000 *satyagrahis* demonstrated before the office of the Collector of Saharsa on November 19, 1984. They demanded:(1) Compensation for the loss of, or damage done to movable and immovable properties; (2) A commission



Shivanand Bhai addressing a gathering of breach victims

headed by a judge of the Supreme Court or the High Court be appointed to probe the breach in the embankment and those found guilty be punished and (3) Hard and soft manual schemes to create employment be started immediately.

Shivanand Bhai explained, "The Collector called us and asked what we were up to? 'What is this hooliganism?' he asked. We were hurt. The then Minister for Revenue, who hailed from the same area said that your way of protesting is against Gandhism and does not match with the *sarvodaya* principles. We tried to convince them but to no avail. We then decided that we would *gherao* the officials and stall the administration... The Collector contacted the Chief Minister who was then in Ranchi and apprised him of the situation in Saharsa. He asked for permission to resort to police firing to maintain law and order but failed to get it. That is how the movement picked up momentum…Later, we took the help of one of our friendly organization, Rural Entitlement and Legal Support Centre (REALS), for legal aid and filed a petition in the Supreme Court for the payment of compensation. Advocate Ram Chandra Lal Das helped us a lot in legal matters. The Honourable Court in its judgment disposing the case, (Writ No: 5212 (1985) between REALS, Patna versus the Government of Bihar, dated 20 February 1989) wrote that, 'We have heard learned counsel for the parties and perused the pleadings. Counsel for the State of Bihar has agreed to the suggestion made by us that a High Powered Committee shall be set up by the State of Bihar within two months to enquire into the Kosi Embankment Breach in 1984 and the loss sustained on that account to person and property, for the purpose of providing adequate compensation. The Committee shall make its report to the State Government within three months from the date of its constitution. The petitioner would be entitled to place its case before the Committee when it is constituted. The writ petition is disposed of accordingly. No costs.' The bench comprising of Mr. Justice Rangnath Mishra and Mr. Justice K. Jagannath Shetty passed this judgment…This Committee has not been constituted till date (1992). I enquired with a high official of the state about the details and he said that if the Government started giving compensation this way, it would become bankrupt."[46]

When the state government took no action over the judgment of the Supreme Court, REALS filed a contempt

petition on April 3, 1992. This was not followed up because the motive force behind the people's struggle, Prem Bhai expired shortly. There has been no action of any kind over this issue ever since.

4.7 Samani and Ghonghepur Breach in the Western Embankment (1987)

A similar incident took place in Samani and Ghonghepur villages of Mahishi block in Saharsa district in 1987. Being located towards the end of the western embankment, these villages remain flooded for a significant part of the year. The breach in the embankment only added to the problems of the people who, however, were not as lucky as those in Dalwa, Bhatania or Bahuarawa. They had to face the tragic consequences.

4.8 Joginia Breach of the Western Embankment (1991)

This was the last major breach in the Kosi embankment. Although similar breaches had taken place earlier at Dalwa, Jamalpur, Bhatania and Bahuarawa, this particular breach created political turmoil in the state.

The Kosi Project has been a notorious grazing ground for politicians, engineers and contractors and the situation remains unchanged, even today. Apart from the Kosi, embankments built over various other rivers of the state keep on breaching in a never-ending story. In 1990 there was a change in the government following the elections that year and Lalu Prasad Yadav came to power. The Water Resources Minister in his cabinet held the view that corruption was mainly responsible for the floods in the state. He cut the annual flood control budget drastically after taking charge of the ministry. He also publicly stated many times that he would plug all the holes through which money meant for flood control used to leak.

He, however, made a basic mistake while assuming charge. Out of sheer enthusiasm, he stated on the floor of the Vidhan Sabha in 1991 that he would resign if there was a breach in any embankment in the state. Making a statement of this kind was taking things beyond practical limits. He must have thought that through his efforts he would ensure the safety of the embankments and somebody must have convinced him that the embankments breached only because of corruption. The fact, however, is that any embankment built judiciously with all sincerity and honesty, can breach for technical reasons. Corruption increases the chances of frequent breaches, but it can never be the sole cause of embankment failure. That is the reason why a sizable number of engineers are opposed in principle to building embankments for flood control. After all, the rise in the bed of the rivers due to embanking or waterlogging in the countryside does not take place because of corruption in the engineering departments. Nobody, it seems, told the minister about this fallibility of technology or advised him against making such an extreme statement. Breaches in embankments are as sure as death. They can be reduced by proper treatment but cannot be avoided altogether. Just as nobody knows where and when one will die, so also nobody knows where or when embankments will breach. Embankments, even if made of steel, can be overtopped if faced with floods like those of 1954, 1955, 1968, 1971, 1978, 1984, 1987, 1998, 2000, 2004 or 2007 and can cause the same damage as that of breached earthen embankments although they would stay in place.

Neither the wealth of the USA nor the public cooperation of China could prevent such breaches. Uncertainty about the safety of an embankment increases if one has to deal with a river like the Kosi that is known for its vagaries. Bihar has a long history of embankment breaches and they are not all due to corruption or carelessness alone.

Having said so, let us now go to Joginia. It is a small village near Bhardah in Nepal, not very far from Dalwa and is located by the side of the western embankment of the Kosi in the 3 and 4km stretch south of the Bhimnagar barrage. The responsibility for maintaining these embankments lies with the Water Resources Department of Bihar. The river had been threatening this embankment near Joginia since July 14, 1991. It started flowing close to the foot of the embankment on July 16th. It did not spill its banks but it started eroding the embankment from within. The discharge in the river that day was 6660 cumecs (235,070 cusecs) and the water level was only 25cm below the adjoining land. This was a dangerous situation because with any further rise in the water level and with continuing erosion, the embankment was highly vulnerable. If it breached and the water level in the river was higher than the adjacent ground, the water would choose its own course and cause devastation in the countryside. This fact was known not only to the Bihar engineers but also to the people living close by. It was the job of the engineers to ensure the safety of the embankment and they were operating under pressure. On the other hand the people were agitated about the possible deluge. The Nepalese people concerned about the erosion and the engineers responsible to prevent it were there together in Joginia and the simultaneous presence of both at the same place had charged the atmosphere. The Chief Engineer of Bihar visited the site around 16.30 hrs to inspect it. He was accompanied by the Chief District Officer of the Nepal area, the Superintendent of Police and the Deputy Superintendent of Police of Raj Biraj and two senior Nepali engineers. After the

Chief Engineer left the venue, all the Nepalese officers left the site around 19.00 hrs. Now only three policemen were left at the site who were inadequate to prevent any untoward incident.[47]

The crowd began to swell at the work site with passing time. People started raising slogans and the situation soon became chaotic. "There was too much excitement. Somebody was shouting that the embankment was being breached willingly. Somebody complained that no payments had been made for the works done over the past 3 or 4 years. When the floods threaten, the department makes false promises and gets the works done and once the emergency is over, it calls the claims bogus and does not release any funds. Nobody will cooperate this time. Let us see which contractor comes to work here to save the embankment. Somebody was suggesting that there were a lot of boulders and crates of the contractors available nearby, why not take them."[48] Around 8 o'clock in the evening, the Nepalese truck drivers and labourers struck work. Thus, there was non-cooperation on one side and an agitated mob on the other while the river was continuing to erode the embankment and the situation was very tense. In the wee hours of July 17th, around 2:00 am, the Nepalese police asked the Indian engineers to leave the site, in a bid to defuse the situation and they left.

On the morning of July 17th, Nepalese officials visited the site once again and the Chief Engineer of the Kosi Project arrived from Birpur. By this time, half the slope of the embankment on the riverside was eroded. The Chief Engineer's car was stoned at Raj Biraj. He escaped unhurt but his car was damaged. On the same day the Water Resources Minister of Nepal and the Indian ambassador to Nepal visited the site and around 11.00 hrs, the Secretary of the Water Resources Department of Bihar and the Chairman of the Ganga Flood Control Commission made an aerial survey of the erosion site, flying at very low heights. The slope of the embankment was eroded along a 300m length and by evening, half the crest of the embankment had fallen into the river but the river was still within its limits. The Indian engineers did not find it safe to work there and left for Birpur.

There was a furore over the breach in the Bihar Vidhan Sabha on July 18th when the members demanded the resignation of the minister. They reminded him that he had asserted in the House that if any embankment breached during his regime, he would resign. Thus, on the ground of 'principles, commitment

Ensuring safety of Embankments

and the respect that the House commanded', the minister was asked to resign. Those seeking his resignation included his own party men, apart from the members of the opposition. They charged that the embankment had breached in the evening of July 17th and the floodwaters had entered Nirmali and many other parts of Saharsa district. The opposition members wanted to know from the minister what the government had been doing for the past one year when the embankment was being threatened? Lalu Prasad Yadav was not there in the House that day. The Water Resource Minister submitted his resignation before lunch and left the House in a huff.

Before submitting his resignation, the Minister told the House that, "The pressure of the river water was being felt at the place where the embankment is reported to have breached since July 14th and the government was aware of this fact. Since the spot is located in Nepal, we could not start any work in the absence of its permission. We had stacked a good amount of stones and steel at the site. Our officers were there. We were fully equipped but the contractors did not allow us to proceed with the work. Neither the Government of Bihar nor the Government of Nepal could convince them. The contractors there want four and half crore rupees every year and if they do not get this money, they will not allow you to work. The contractors are given this amount year after year and if this does not happen, the embankments would be (deliberately) breached."

The Minister added, "The same day (July14th), the Collector of Saharsa along with many senior officers of the Water Resources Department left for the erosion site but the contractors did not let them in. The contractors have seized the site ever since… and these occupant contractors want that the boulders should be purchased from them while the government has its own 100,000 cubic feet of boulders and 80 tons of steel wire (to make crates) very close to the erosion site. They have *gheraoed* the site with the help of over two to two and a half thousand Nepalese citizens and are trying to strike a bargain. …Some 20 to 22 contractors of Indian origin are threatening that if the Bihar Government gives them one-and-half crore rupees, they will allow the protective works to be carried out….Last year we tried to check the loot that was taking place for the past so many years and the state government saved two-and-half crore rupees there. With the same money, the repairs were carried out before the outset of the monsoon." [49]

On July 18th, Nepalese police and the Royal Army arrived at the Joginia work site and the Indian engineers resumed their protection work. Work on the retired line was also started and within a few days, the job was completed.

The dust in Patna, however, did not settle down. The minister had resigned but soon it was revealed that it was not clear whether the embankment had breached or it had simply been eroded as no damage was done to life and property. The news that floodwaters had entered the districts of Saharsa and Madhubani was also just a rumour. This was confirmed by a statement of the Minister of State for Water Resources in the Vidhan Sabha on July 19, 1991. The debate now turned to whether the embankments had breached or were they just eroded. The contending parties were trying to define a breach and erosion. If the river water emerged out of the gap, then it should be called a breach otherwise it was just a damage to the embankment, was the emergent consensus.

Raghunath Jha, MLA, however, was not convinced that the water would not spill with just the erosion of the embankment. He said, "We all know that when the embankment is eroded, the water will go on to the other side, for sure."[50] The fact was that such a breach had occurred in Bahuarawa but the river water did not spill out. Bhatania, too, was a similar case but in the case of Dalwa, there was some spilling. That time no resignation of the minister was demanded nor was it given. In 1968, there was President's Rule in the state when the embankments breached at five places and there was nobody to demand or submit a resignation. Whether the embankment had breached or it had just eroded in Joginia, the minister had already tendered his resignation.

Government Constitutes An Enquiry Committee

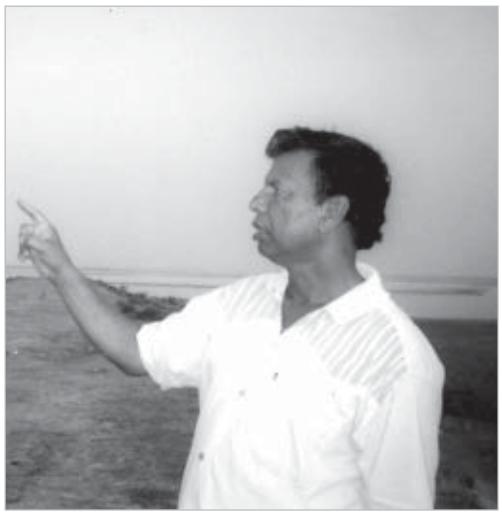
The matter subsided only when the Speaker appointed an 11-member Special Committee of the Vidhan Sabha to inquire into the whole episode. This Committee submitted its report on March 30, 1993 and found that the embankment was 'damaged' and wrote that, "If there had been no unpleasant scenes at the site on 16th and 17th July, then it would have been possible to save the Kosi embankment from getting damaged, by working on a war footing. It is regrettable that despite the availability of materials and the competent manpower of the department, the work could not be executed for unavoidable reasons. When coordination between the officials of the Nepal Government and the Indian engineers was established, the job was completed within record time."[51]

No action was taken over the resignation of the Water Resources Minister and he continued to hold office.

The embankment at Joginia was damaged and not breached. It was only a coincidence that the level of the river water was low and there was no calamity. If the

water level had been 30cm above the adjacent ground level, instead of being below it, the situation would have been entirely different. In such a case the villages of Barsain, Koirali, Hanuman Nagar, Madhepura, Rampura, Dalwa, Joginia, Parsahi, Babhangama, Tilathi, Inarwa, Lonia, Sarbuha, Kusahar and Parsadih in Saptari district of Nepal could have suffered calamitous hardship. The misery would not end there. The floodwaters would not have spared villages in Madhubani and Supaul districts and would have breached the western Kosi embankment, at least, at one more point in an attempt to get back into the Kosi.

Ganga Prasad Yadav, a resident of Joginia village in Saptari district, elaborated, "Our village, fields, and orchards were located within the Kosi embankments. All that is lost to the river as it meanders there and has eroded all that we possessed here. The river came very close to the embankment in 1991 here in Joginia. There was no spur of any kind on the embankment and it was endangered. Had the embankment breached here, it would not only have wiped out villages in Nepal, it would also have devastated villages up to the confluence of the Tiljuga with the Kosi, in India." The villagers in the flooded areas know the direction of flow very well and can tell, without the help of any theodolite or a dumpy level, the course the floodwaters will take in the event of a breach at a particular place and also the extent of damage that would ensue. After the embankment was damaged, news of the disaster that never occurred started pouring into newspapers and magazines that was far from the truth.



Ganga Prasad Yadav

A similar incident took place in 1988 at the time of the Bihar-Dharan earthquake. There was a news item in the newspapers on August 21, 1988 that there has been a fissure in the Bhutahi Balan embankment because of the earthquake. This much was correct, but the next day news spread that a number of villages had been inundated by the floodwaters of the Bhutahi Balan. The local people were alarmed because no such inundation had taken place. It so happened that there was a longitudinal crack over the crest of the Bhutahi Balan embankment due to the earthquake but the structure was totally intact. The correspondent, however, when he got the news of the crack in the embankment, completed the report for the next day for he knew the villages that would be inundated if the river breached the embankment at that spot. The report was filed, without going to the site. Things did not stop at irresponsible journalism in the newspapers. A very respected magazine reported, "In Nepal, news reports that a 400m breach in the western embankment at Hanuman Nagar had displaced 50,000 people in 12 villages in Saptari district, was followed with veiled insinuations that India was responsible for the calamity, and should, therefore, deal with it."[52] Interestingly, the news mentioned that 150,000 people in Saharsa and Madhubani districts of Bihar had also lost their homes in the same deluge.

It would be unfair to end the discussion without listening to the version of the contractors who work on these repairs and maintenance projects in Nepal. Durga Nand Jha of Hanuman Nagar in Saptari district explains, "There are two committees of India that decide on the works to be taken up here. One is the Technical Advisory Committee and the other is the High Level Committee. These committees visit the area only during the dry season and their job, it seems, is to negate what the engineers of the project propose here. A spur was proposed at 2.25km distance by the engineers of the Kosi Project in 2002 and the committees rejected it. The river has come very close to the Western Kosi Canal and anti-erosion works should be taken up but nothing has happened. We are not in a position to suggest anything. The situation had become alarming in 1998 at the 9th kilometer. Many contractors fled away from the scene. I worked at 5.80km in 1989 and the payments have not been made to me till date. I also worked on repairs in 1988 till the Indo-Nepal border at Kunauli. That payment is still due; hundreds of Nepali labourers must have worked then. We tried to meet the Chief Engineer, the Superintending Engineer and the Executive Engineer at Birpur but with no results. We have not been paid since 1988. Payments of the bigger contractors are never held back but smaller ones like us always suffer."

It is not intended to dilute the challenges thrown by the Joginia episode. A sum of Rs. 5.17cr had to be spent on the repairs of this 'damaged' embankment[53] and India had to pay a compensation of Rs. 19.80 lakhs to Nepal for acquiring temporary lands, trees, crop losses and shifting houses, etc.[54] This money for losses in Nepal was deposited in a bank in the official account

of the Government of Nepal and the latter had to distribute it to the affected Nepalese people. Indian engineers had to face the wrath of the people when they went there to carry out the repairs, for no fault of theirs, due to delays in making payments to the Nepali citizens in 1992. The mental agony and humiliation they had to face was over and above all this.

The Water Resources Minister of Bihar had to tender his resignation in 1991 and this was an unprecedented event in itself. His three year's stint in office changed his attitude towards the failure of embankments. In 1993 he told *The Times of India* that a couple of breaches in an embankment line of 3700 km in the state did not mean that the state was incapable of maintaining them. After all, the state had not prepared itself to meet all eventualities. That would involve enormous costs, he said.[55]

Locally, undertaking contracts in the Kosi Project is not seen as a business but as a means to make enormous sums of money with the help of political patronage. Vested interests treat these projects as cash cows and all their effort is aimed at milking them. Resources are needed to run politics and they are generated through such works, whether the job is actually done or not. The people, however, believe that these projects are meant for their benefit, as written on paper and recorded in the files. The establishment decides the priorities of a job and the degree of benefit to the people or the vested interests is based on this decision. There cannot be any protests to change or amend these decisions. The Water Resource Minister of Bihar wanted to save Rs. 2.5cr in 1991 but he ended up spending double the amount that year. The money spinning wheel is unlikely to stop.

Participating in a debate on floods in 1993, in the Bihar Vidhan Sabha, Jagannath Mishra, the former Chief Minister of Bihar said, "The Irrigation Minister had announced in the Vidhan Sabha that the embankment had not breached, while the committee maintained that it did. I do not want to get into that controversy…Earlier, there used to be 24 hours vigil for the safety and security of the embankments and there used to be departmental camps there, the police used to be there but we see that such attention was not given by the Irrigation Department nor was it given by the district administration….Should the embankments breach in the month of September, we will not forgive anybody and the Vidhan Sabha, too, will not forgive the Irrigation Minister or the Chief Minister."[56] The fact, however, remains that the embankments have often breached in full view of the officials of the Irrigation Department, police and the district administration, during the rule of all the political parties in the past and will continue to do so in the future also. The assurances given by politicians, holding the engineers or the district administration responsible for the lapses, seeking pardon and forgiving others, resigning and reprimanding, etc. are all a part of political theatre and have nothing to do with the well being of the people.

As far as the Kosi embankments are concerned, episodes like those at Dalwa, Kunauli, Jamalpur, Bhatania, Bahuarwa, Hempur, Ghonghepur, Samani and Joginia test the people's endurance. If the river is kind to them, incidents like the one at Dalwa, Kunauli, Bhuarawa and Joginia take place and in case it is furious, the Jamalpur, Bhatania, Hempur, Ghonghepur and Samani disasters are repeated. There are dozens of vulnerable points on both the embankments of the Kosi and a battle for survival is fought every year at these points, sometimes with the help of railway engineers and sometimes with the help of the army. If the embankment survives the attacks of the river, it is the good fortune of the people. If it fails, it is easy to identify the people whose desperate efforts at making a fast buck are successful. The Water Resources Department will perform its duties, in the true Indian tradition and leave the results to providence. The people, too, will comply with God's wishes and blame their own *Karma* for their plight, until they awaken.

4.9 Nirmali's Ring Bund

Not long ago, Nirmali in Bihar's Supaul district used to be a very big market for grains. To an extent, it still is. It is virtually the last Indian market between Ghoghardiha and Kunauli village on the border of Nepal. In the 1950s it used to export 16,000 tons of rice, 4,000 tons of jute and 400 tons of linseed to outside markets besides feeding the Manohar Patti Sugar Mill with sugar cane. It was a terminal railhead of the North Eastern Railway which added to its importance.[57] Going by the commercial importance of the town, it was necessary to save it from the onslaughts of the Kosi floods.

It was decided to throw a ring bund around this town and to construct it along with the Kosi embankments. It was completed in 1955-56. Apparently the town was saved from the floods of the Kosi and there was no chance of the floodwaters entering the ring anymore. An unintended affect of the ring bund became apparent immediately after it was built. Rainwater that collected within the Nirmali bund could not find a way out, as all the routes leading it away from the town were sealed. Even if there was a short duration shower in the ring, it was enough to inundate the town. The Kosi Project procured some pumps and used them for draining out the accumulated water. Those were the heydays of the Kosi Project when the construction work was at its peak. There was no dearth of resources and the pumps were installed

immediately. No sooner was the work on the embankments and the barrage completed, the Kosi Project started winding up operations and all the pumps and the motors were withdrawn. With this withdrawal, the problems of Nirmali came to the fore.

In 1967 Vinayak Prasad Yadav, MLA, raised the question of Nirmali's problems in the Bihar Vidhan Sabha. He said, "Even if it rains a bit, the town gets flooded. I got a telegraphic message from the Chairman of the Notified Area Committee and I showed it to the Irrigation Minister who said that it does not concern his department, it is related to the Local Self Government Department. Nirmali town is located on the western embankment of the Kosi and efforts were made to save it from floods. But the water accumulates in the town during the rainy season. When the Kosi embankment was being constructed, 3 or 4 pumps of the project were used to lift the water out but for the past 4-5 years, this has been suspended…..Barring some 15 or 20 well-to-do families who own *pucca* homes, the rest of the people in the town live in huts. Water enters their houses but neither the LSGD nor the Irrigation Department does anything to save the people from trouble."[58]

The government listened carefully to what Vinayak Prasad Yadav had to say but did nothing. Shankar Prasad Tekriwal (1971) had to repeat the demand for the government to intervene in the situation and this time Kedar Pandey replied on behalf of the government. He argued, "It is well known that after the construction of the ring bund, Nirmali has been spared of the erosion that used to take place earlier and a sense of security has developed among the inhabitants of the town. Business has flourished….During the rainy season, water enters Nirmali town and the question is raised every year how to drain this water out. Although it is not the responsibility of the Kosi Project to do away with this water, yet, the River Valley Department has kept some pumping sets for the purpose that are operated during the rainy season by them."[59]

Obviously, the Kosi Project was not responsible for saving the people from inundation but it was within its jurisdiction to create problems for the inhabitants of Nirmali. It saved them from erosion but consigned them to flooding.

The Kosi Project later installed three pump sets of 49HP capacities, at three different locations on the ring bund to help drain the water that stagnated in Nirmali town. With time, these pumps have become old and defunct and at present only one pump house located on the eastern side of the ring works. There is a limit to which this pump house can dewater the town. The other two, located on the northern and the southern periphery of the ring are non-functional. The Kosi has sand cast the area on the east and on the western side, the Bhutahi Balan with all its smaller rivulets, has raised the ground level. Now the outside ground level is higher and Nirmali lies low within the ring bund. The pump that is owned and operated by the Kosi Project is not a part of their obligation to the people of the town, it works when reasonable pressure is brought on to the project authorities. Surya Narayan Kamat, an advocate and a resident of Nirmali says, "The pumps are operated when the SDO of the project is *gheraoed* by the people with all their traditional arms of *lathis* and sticks. For three months, this town becomes hell on earth. Half of Nirmali remains under water, which includes my house too. Ward numbers 1, 2, 5, 7, 8 and 9 are always under water in the rainy season. The entire staff of the Railway Colony, the Station Master included, come and stay at the railway station. Rail services remain suspended for a long time during the rainy season and barring this there are no means to get out of Nirmali on those days. On the road that connects Nirmali to Ghoghardiha, there are three bridges between Belhi and Ghoghardiha that are in a dilapidated condition for the past 6-7 years and buses cannot ply over them. Tractors manage to negotiate these bridges somehow, but that too only in the dry season. This road is often overtopped by the floodwaters of the Bhutahi Balan by 2 to 2.5 feet deep water. Bhutahi is a ghost river, its water comes and goes but you really do not know when you will be confronted by this ghost. That fear always remains and it is rarely that somebody musters enough courage to cross these bridges during the rainy season."

Surya Narayan Kamat

Nirmali has a hamlet, Navtolia, outside the ring bund, on the riverside and about a kilometer from the railway station. It is connected with the main town by a road. A screw pile bridge was constructed recently, in 2000, with the help of the funds available with the MPs at a cost of Rs. 26 lakhs. It was washed away by the first rains of 2001. Another similar bridge was washed away on the same day, in the Saroja Bela Panchayat some 10km south of Nirmali. Neither of these bridges had been formally inaugurated.

There is another block called Marauna, adjacent to Nirmali. It was created in 1956 but it does not have a block office building till date. Marauna village is located within the Kosi embankments and remains cut off from the rest of the world for four months in a year. The block office used to function from a rented house in Nirmali for a long time. Then it was shifted to Vikas Bhawan in Belhi village. There was no Block Development Officer in Marauna in April 2003 and the Executive Magistrate of the Nirmali Sub-Division looked after the block from Nirmali. There is no Circle Officer in Marauna and the Circle Officer of Nirmali does the job. There is no building for the *thana* of Marauna either and it operates from the Panchayat Bhawan of Marauna North. Marauna has a health center and four MBBS doctors are appointed there but none stays in the village. There is one high school in Marauna but it is located in Agargadha outside the embankment. There is no college in the block. Yet, Marauna is a block. Marauna block has one useful feature. If a government employee has to be punished, he is threatened with transfer to Marauna.

4.10 The Ring Bund around Mahadeomath Village

Mahadeomath is a village now. It used to be a thick forest not many years ago. In the process of clearing the forest, a statue of Lord Shiva emerged from the ground and the village was named after Lord Shiva. A childless contractor, Ran Briksha Singh, constructed a temple to Lord Shiva here and was blessed with a son later. That added to the prominence of the temple and the village.

When the western embankment of the Kosi was proposed, Mahadeomath was located within the embankments and a ring bund around Mahadeomath was proposed to save it from the Kosi river. It was constructed in 1955. Belhi hamlet of this village was located outside the ring bund and it was provided with rehabilitation within the main village. There was some tussle over the alignment of this ring bund as there used to be a pond toward the north of the village and the bund was aligned to pass encircling this pond. This was changed. The ring bund has two sluices; one with six gates acts as an inlet and the other with seven, as an outlet. The village is thus on the transit route of the water and is always under threat during the rainy season. The ring bund is located within the Kosi embankment and is directly affected by the sedimentation of the Kosi riverbed. The ground level outside the ring has risen considerably and blocked the outlet sluice. Thus the water that enters through the inlet sluice, finds it difficult to get out of the ring.

In 1987 Bihar experienced its worst floods after independence. That year a contractor left some building materials within the ring bund that included some bamboos and wooden planks. When the floodwaters entered the ring bund, these materials got stuck in the sluice gates blocking the water passage. This resulted in a sudden rise of the flood level within the ring and there was a virtual panic in the village, with people running for their life to the ring bund as that was the only place where one could take shelter. The irate people then cut the bund in the lower reaches to drain out the water. They returned to their homes but only after staying out in the open, on the embankment, for about six to seven days. Then the Water Resources Department of the Government of Bihar came, not with any relief for the people to tackle the calamity, but to institute cases against the 'miscreants' who had cut the ring bund. An enquiry was instituted to investigate the entire episode and the cases were withdrawn only after the intervention of a local minister, Kripa Nath Pathak.

With the Tilyuga in the east, waterlogging in the west and the ring bund in between, the village becomes risk-prone during the rainy season. "In 2002, the ring bund was not cut but it breached on its own, due to the pressure of water and the government floated tenders for repairs," says Indra Deo Kumar, a resident of Mahadeomath. "The Madhubani District Board gave a grant of Rs. 131,000 to dig a channel connecting

Indra Deo Kumar

the two sluices to facilitate the passage of water. Virtually no work was done but the money was exhausted. The result was that when surplus water from the Western Kosi Canal was released through the escape channel, it entered the ring and swept away the wheat crop over an area of about 20 hectares. The local people put two demands before the administration; one, the sluice gate through which the water enters the

ring bund of Mahadeomath should be closed and two, the size of the outlet sluice should be increased. At least some extra hume pipes should be provided in the sluice to drain the water out. Nothing was done."

In 2002 the western Kosi embankment was cut about half-a-kilometer upstream of Mahadeomath by the villagers of Dakahi and Dharhara. These villages are located on the countryside of the embankment and the water level there had risen very high as there was no route available for it to escape. The stagnant water flowed into the Tilyuga for a while but then the levels inside and outside became the same and the flow stopped. It took a lot of time to drain the water out fully. A *thana* was located close by and police cases were registered against unknown persons, but with the passage of time the case was forgotten. An Assistant Engineer of the Kosi Project from a base camp at Kunauli, tried to visit the site when the villagers of Dakahi and Dharhara were cutting the embankment, but apprehending trouble at the location, he went back.

Now Mahadeomath cannot grow a kharif crop because of floods and waterlogging. The rabi crop is a possibility but it depends on the mercy of the escaping waters from the western Kosi canal that enter the ring bundh from the inlet sluice. If it spares the crop, there is something to bring home. All repairs of the ring bund have been suspended since 1990. Bindeshwari Dubey promised a referral hospital at Mahadeomath when he was the Chief Minister in 1986. A foundation stone was laid but nothing followed later. The same assurance was repeated by Bhagawat Jha 'Azad' when he was the Chief Minister, but that too, proved to be only an unkept promise. A wooden bridge over the Tilyuga, a short distance from Mahadeomath, was washed away in the floods of 1987. It used to link Mahadeomath and the villages of Rauahi, Mainahi, Bagewa, Khursaha, Bela and Dighia, etc. It was built during the tenure of Jagannath Mishra as Chief Minister, but nothing was done to revive the link.

4.10 Conclusion

The embankments or the ring bunds were supposed to protect people from floods. The case histories described here can help us decide whether the promises made to the people were fulfilled or not. There may be differences of opinion over the issue, as people living far away from the river may claim that they have benefited. But even such people live in terror throughout the rainy season as any breach in the embankment in the upper reaches may affect even up to Purnea or Katihar. They all hope that if a dam at Barahkshetra is built, their problems will be solved. We have briefly discussed some issues about this proposed dam in Chapter 2 and will study in greater detail in Chapter 10 the reasons that are preventing the planners from going ahead with it. One thing, however, is certain that distribution of relief or treating the problem of floods in the state as a 'disaster' only treats the symptoms. There is much more to the flooding of these river plains and the plight of the people living within the embankments or immediately outside them, than meets the eye. Mismanagement and manipulation of technology, vested interests, withholding information from the people, not responding to the needs and aspirations of the affected populations and politicking in the name of flood control are only some facets of it. For striking at the roots of undesirable floods, something other than constructing embankments or promising high dams needs to be done. We shall investigate this issue in Chapter 10.

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5
The Eastern Kosi Main Canal

In Chapter 2 we reviewed the Kosi floods and the decision-making process which led to undertaking the Kosi Project in the 1950s. It has been argued that despite the construction of the embankments on the Kosi, a vast section of the society is either unhappy living within them (Chapter 3) or lives in constant fear of their breaching (Chapter 4). The irrigation component of the project through the Eastern Kosi Main Canal (EKMC) was no less important and to add glamour to the project, a hydroelectric powerhouse at Kataiya was added later. The Western Kosi Canal (WKC) was not a part of the original scheme. It was added subsequently. In this chapter we will analyze the performance of the EKMC. We shall glance through its status in the background of its stated objectives and try to peep into its future.

5.1 The Eastern Kosi Main Canal (EKMC)

The 43km long EKMC takes off from the left bank, upstream of the Kosi Barrage near Bhimnagar (Fig-5.1). It flows for about 16km in the southeast direction and then turns east. It crosses the Purnea–Jogbani rail line and finally terminates in the Parman river near Forbesgunj. It crosses 12 abandoned channels of the Kosi in its journey to the Parman. The original plan of 1953 had envisaged four branch canals namely, the Murliganj Branch Canal (length 64km), the Janakinagar Branch (81.6km), the Purnea Branch (64km), and the Araria Branch (57.6km). It was proposed to irrigate 495,000ha with these canals. By providing irrigation in different seasons, the gross cultivable command area was expected to be 569,000ha.

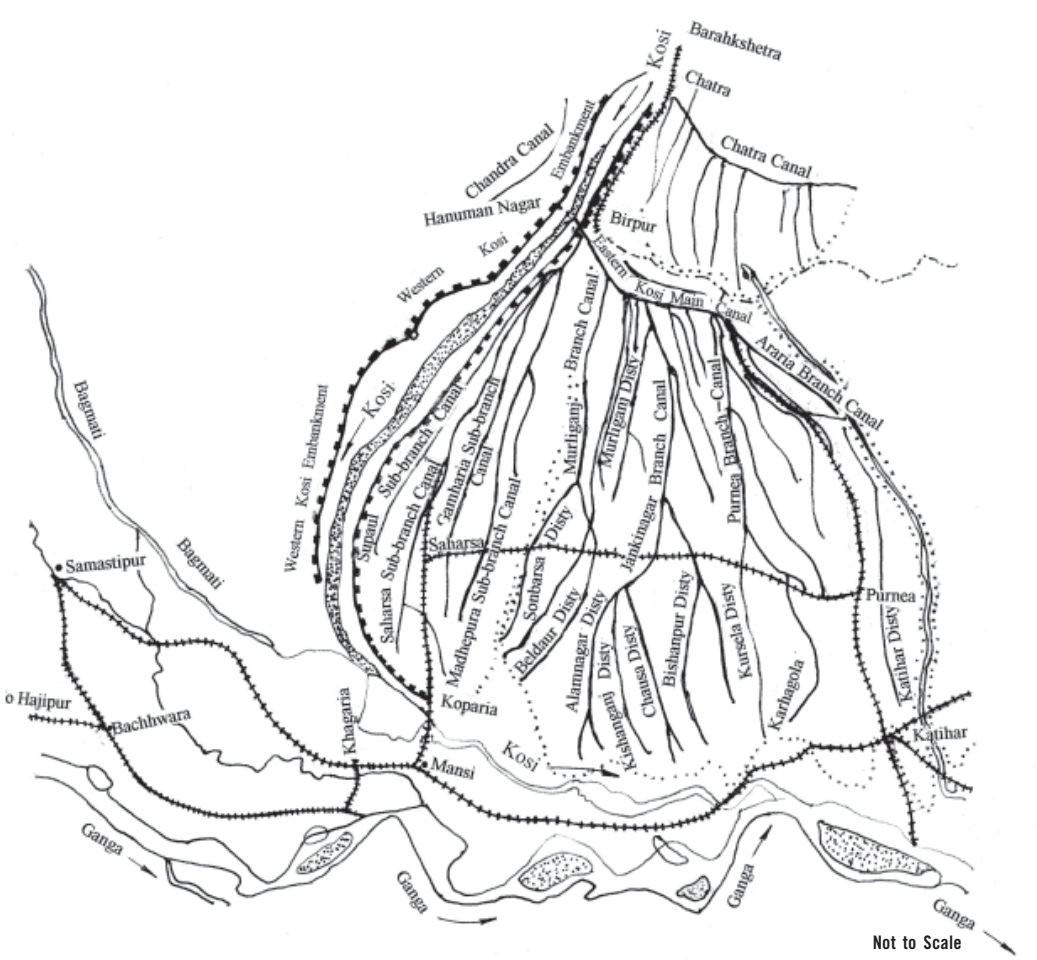
In 1953 it was proposed that only the area contained between the Bhenga Dhar and the Panar would be irrigated by the EKMC system. Between Bhenga Dhar and the eastern embankment of the Kosi, there were many abandoned channels of the river and it was proposed to drain some 1400cumecs (around 50,000cusecs) of the flow in the Kosi through these channels. It would reduce the pressure on the embankments also. But later this idea was dropped due to some technical reasons. At that stage the question of irrigating the area between the Bhenga Dhar and the eastern Kosi embankment came up for consideration. A new canal, the Rajpur Canal, was constructed for this purpose. It has four sub-branch canals namely, the Madhepura sub-branch canal (80.25km), the Gamahria sub-branch (77.36km), the Saharsa sub-branch (89.78km), and the Supaul sub-branch (74.90km). The Rajpur Canal was meant to irrigate 117,000ha with a gross cropped area of 143,000ha. Thus, EKMC and the Rajpur Canal put together were supposed to irrigate a gross cropped area of 712,000ha. This was a very ambitious target.

5.2 Irrigation from the EKMC

The construction of the EKMC started in 1957 and on July 8, 1964 the then Chief Minister of Bihar, Krishna Ballabh Sahay, released the first irrigation waters into it. The construction of the Rajpur Canal was started in 1962 and it started irrigating in 1968. The year wise details of the actual irrigation done by these canals are given in Table 5.1. It does not evoke much confidence in the project.

Against the planned gross command area of 712,000ha for both the canals, the actual maximum irrigation was achieved in the 1983-84 season when they irrigated 213,000ha. The previous best irrigation from them was 202,000ha in 1972-73. This irrigation was far below the target, which was consistently missed. It was a cause for concern for everyone related to the project. Some of the reasons for the shortfall were technical and some were traditional. The land in the command area of these canals was undulating because of the ever-changing course of the river. Hence the bigger canals were easily constructed but when an attempt was made to construct the smaller canals and village channels, the land profile became a hurdle. The Irrigation Department got stuck there. Over centuries, people in the area had adapted to the floods and the river and had developed their own means of irrigation and an appropriate cropping pattern. It was very difficult for them to switch overnight to a new system, whose results they were not very sure of. It was altogether a different thing for the farmers to listen to or to narrate the stories of irrigation and the resulting

Fig. 5.1 : Index map of Eastern Kosi Main Canal



Exactly the same problems had been faced earlier during the development of irrigation in the Damodar Valley project and in the Mayurakshi Dam where: (i) The average rainfall ranged between 1140 mm to 1270 mm while paddy needed only 1000 mm for its growth; the result was that the farmers would use canal water only in the drought years; (ii) Plans for the use of canal waters were more than optimistic; (iii) Water courses were not constructed in the beginning and the farmers resorted to field to field irrigation resulting in the loss of 20 to 30 per cent of water due to seepage; and (iv) Over half the command area of the canals was undulating where it was not possible to provide water and it was foolhardy to expect that the farmers would be able to level their lands.[1]

prosperity in the Ganga or the Yamuna Canal command areas, or about the Bhakra canals; it was difficult for them to adapt to canal irrigation overnight.

Also, according to the original plan of the Kosi Project, canals with up to 5cusecs flow were to be constructed under that Project. It was expected that the farmers would make the smaller channels on their own initiative and take the water to their fields. Very soon the government realized that even this was not a viable proposition and it decided to construct channels up to one cusec capacity. The problem, however, did not end there. Resources and expertise were needed to extend the channels below one cusec capacity and the farmers possessed neither. Soon everybody realized that it was not possible to level the land and therefore the canals would have to be made taking into account the land profile. There was no preparation to carry out such works initially. Actually, the Irrigation Department assumed that having constructed channels of one cusec capacity, it would solve all the irrigation problems of the people but in practice, the problems started from there.

Canal irrigation planning follows some basic design rules. The thumb rule for assessing irrigation suggests that one cusec of canal water can irrigate 100 acres (40ha) of land. This thumb rule itself is doubted by many. A major portion of the canal waters seep into the ground and generally not more than half the quantity of water released from the headwork reaches the fields. While this makes the water available for irrigation short of requirements, it also causes waterlogging all along the canal. Also, the canals often cut the drainage line of the rainwater and it gets stuck outside the canals causing further stagnation. Sand accompanying the canal water too gets deposited over the fields and renders them infertile.

All these problems were noticed, almost simultaneously, once irrigation started from the EKMC. They brought to the surface the lethargy and the corruption in the Irrigation Department. In the very first agricultural season after irrigation started, Pitambar

Eastern Kosi Main Canal Headwork at Bhimnagar

Choudhary (MLA) suggested to the government that, "We need to increase the extent of irrigation but the most important thing is that the village channels that are so very essential for agriculture should be corrected. Although the Honourable Minister has assured that he is bringing a bill in this regard, it ought to have been done much earlier…the canal rates are also charged, forcibly, on land that does not get irrigated."[2] Jagdambi Prasad Yadav (MLA) complained that the promised irrigation was not being given from the EKMC. He said, "You have given statistics that you have arranged irrigation for so much land but if you investigate the matter, you will find that the new set up is not able to provide the irrigation that the old order provided to benefit the land….I want to emphasize that you should be evaluating your performance, from time to time…that whether you are getting the corresponding benefit for the money that you are investing in the project."[3] When the Minister for Irrigation, Dip Narayan Singh, introduced the formula of one cusec water for irrigating 100 acres to the legislators in 1968, he was full of enthusiasm, "One cusec means that at least 100 acres of land would be irrigated by that much water. I am happy that the farmers have understood their responsibility and constructed the field channels."[4] But the same sentiments were not shared by Anup Lal Yadav (MLA) who ridiculed the formula. He said that, "Village channels are constructed in my area but the desired irrigation is not taking place because of this formula of one cusec irrigating 100 acres of land. This is totally wrong. At best, it is possible to irrigate only 50 acres with a cusec, not more than that. I have toured the area with the Development Commissioner…and he has agreed that the calculation is wrong…As I go round the villages, the farmers tell me that they are not getting water in their fields. When I asked the reasons for that, they told me that it is because of the formula of one cusec versus 100 acres."[5]

By 1967 complaints were also coming from the Araria Canal command area, where irrigation water had been given for a long time, that the canal gradients were faulty and that the water did not travel beyond a certain distance. There the people began to believe that the canal was not going to serve any purpose. It was also causing obstruction to the passage of rainwater and seepage from it was leading to waterlogging that was detrimental to plant growth. At many places villagers requested the canal authorities to cut the canal to drain the water out and ease the situation.[6]

The government clarified its position through Tej Narayan Jha, who said, "Last year, in order to reduce the impact of waterlogging, the Araria Branch Canal had to be cut at six places. The flood was very severe last year. It was proposed to construct a siphon to provide for drainage across the canal but looking at the needs of irrigation during the summer, this idea was

Ill-maintained Murliganj Branch Canal

dropped. This year too, there was a heavy flood in the 4 to 7km and 18 to 22km stretches. The villages of Manikpur and Thila Mohan have been hit. We are ready to make inlets at 6 points ….It is reported that water has accumulated at some places and the farmers have cut the Main Canal at 95 R.D….The Araria Canal has also been cut at one point….The government is fully aware of the situation."[7]

The government was surely alert, as the Kosi canals were supposed to have developed their full potential of 712,000ha by 1969-70 and the system had irrigated just 129,000ha — only 18 per cent of the target — in that season and it was looking for excuses in its defence. In 1970 Lahtan Choudhary stated in the Bihar Vidhan Sabha, "It will irrigate 741,000ha but at the moment only 648,000ha will be irrigated. This potential has been created but we are unable to provide water to all the places … sand casting (in the canals) obstructs the flow of water. Two, the farmers have not made the field channels so far …Three, in the upper reaches of the canal the farmers consume more water and do not allow any control over this. Four, the deposition of sand (in the fields)…We are trying to introduce a system that will help provide water everywhere….We are starting a new project and that is the construction of a silt ejector. This will hold the sand in check and it will flow back to the river."[8]

Deposition of sand in the canal bed was a major problem. It was causing the bed to rise, thereby reducing the canal's capacity. The fields were getting less water and sand deposition was a cause for concern. Clearing sand from the canal beds was one of the biggest scandals that haunted the Kosi Project. These issues are still being discussed. Baidya Nath Mehta narrated a story in the Bihar Vidhan Sabha, of the removal of sand from the canal bed. He was on a trip to Nepal via Birpur. His vehicle got stuck in the sand and he got an opportunity to look into the removal of sand. He told the House, "They cut the earth here and deposit there and vice versa. They make up the undulations and virtually dress the surface. They did not recognize me and were working in their own way and I was watching. This is what is happening in de-silting the canal beds. I tell you, the work in the River Valley Department is worth watching."[9] Mehta was not convinced about the utility of installing the silt ejector in the canal. He was of the opinion that some leaders were trying to make money and for this purpose they were manipulating the transfers and postings of engineers and overseers in the project.

Charges of corruption in the Kosi Project were leveled, not for the first time, by Mehta. It started the day the foundation stone of the Kosi Project was laid

by Shrikrishna Sinha in Bhutaha. With reference to the EKMC, one such charge was leveled in the Vidhan Sabha by Jay Kumar Singh (MLA), "The works that have been done and the national resources that have been invested, it appears, have yielded half the results. The jobs of dressing, etc. were not done at all, it seems. The overseers, SDO, executive engineers of the department have got their percentages fixed and do not report to work. They are only concerned about their cuts….A siphon is being constructed at the 48 R.D. of the Gangapur Branch Canal. I went to see the work the other day, after receiving complaints from many people. I saw that they were joining bricks without watering them. The quantity of cement was virtually nil in the cement mortar whereas its proportion should have been 1 to 4. They save cement there. A mason asked me about my identity and I told him that I was just a member of the public. Somebody intervened to say that I was the MLA. The mason told me that, Sir, you should have given your programme before coming here. We work like this only."[10]

By 1972, there was a heap of problems in the Kosi as voices were being raised from all quarters about the lack of irrigation, rise in waterlogging, spreading of sand on the fields, and sand casting in the canal beds. With that started the demands for instituting an inquiry into the affairs of the Kosi Project. Irrigation rates were being charged on a command area basis which meant that whether a farmer cultivated his fields or not, whether the land was waterlogged or sand cast, charges would be levied on him if the land fell in the command area of the canals. The Irrigation Department was in no way concerned with the problems of the farmers and its sole job was to send them notices and if the bills were not paid on time, to initiate recovery proceedings against them by confiscating their assets and livestock.

5.3 The Kosi Irrigation Committee (1973)

On September 27, 1973 the Government of Bihar constituted a committee to look into the affairs of the EKMC and the problems created by it. It was also expected to suggest corrective measures. Its terms of reference were:

a) How much irrigation is actually possible from the Kosi canals?
b) What is the extent of the actual irrigation from the Kosi canals?
c) What are the remedies suggested for assured irrigation?
d) What portion of the Kosi command should be kept under assured irrigation?

Janakinagar Branch Canal is no different

Table 5.1: Area Irrigated by Eastern Kosi Main Canal and Rajpur Canal (various reports of Water Resources Department of GoB)

		Area Irrigated by Eastern Kosi Main Canal in 000'ha				Area Irrigated by Rajpur Canal in 000'ha				Total Area Irrigated by Eastern Kosi Canal System in 000'ha				% age of Promised Irrigated Area in 1953*	%age of Promised Irrigation by KIC in 1975
Sl. No:	Year	Kharif	Rabi	Hot Weather	Total	Kharif	Rabi	Hot Weather	Total	Kharif	Rabi	Hot Weather	Total		
1	1964-65	3.988	0.04	-	4.028	-	-	-	-	3.988	0.04	-	4.028	0.708	1.077
2	1965-66	24.684	0.745	0.611	26.04	-	-	-	-	24.684	0.745	0.611	26.04	4.576	6.962
3	1966-67	61.696	6.052	4.328	72.076	-	-	-	-	61.696	6.052	4.328	72.076	12.667	19.271
4	1967-68	107.453	11.045	11.951	130.449	2.429	0.056	-	2.485	109.882	11.101	11.951	132.934	18.67	35.543
5	1968-69	97.534	15.765	12.984	126.283	3.608	0.859	0.381	4.848	101.142	16.624	13.365	131.131	18.417	35.061
6	1969-70	107.364	11.518	-	118.882	7.503	2.166	-	9.669	114.867	13.684	-	128.551	18.054	34.371
7	1970-71	67.47	14.717	-	82.187	8.796	3.073	-	11.869	76.266	17.79	-	94.056	13.21	25.148
8	1971-72	54.049	16.356	3.36	73.765	8.377	4.749	0.648	13.774	62.426	21.105	4.008	87.539	12.294	23.406
9	1972-73	131.376	19.555	19.676	170.607	25.911	5.182	-	31.093	157.287	24.737	19.676	201.7	28.328	53.93
10	1973-74	79.555	20.607	-	100.162	13.021	4.691	-	17.712	92.576	25.298	-	117.874	16.555	31.517
11	1974-75	71.66	24.389	-	96.049	11.653	5.744	-	17.397	83.313	30.133	-	113.446	15.933	30.333
12	1975-76	115.121	22.316	-	137.437	19.674	5.564	-	25.238	134.795	27.88	-	162.675	22.847	43.495
13	1976-77	105.223	27.551	-	132.774	22.286	5.481	-	27.767	127.509	33.032	-	160.541	22.547	42.925
14	1977-78	122.097	26.613	-	148.71	24.302	5.666	-	29.968	146.399	32.279	-	178.678	25.095	47.774
15	1978-79	102.619	23.818	-	126.437	23.664	canal closed	-	23.664	126.283	23.818	-	150.101	21.081	40.133
16	1979-80	111.084	31.954	-	143.038	27.159	8.764	-	35.923	138.243	40.718	-	178.961	25.134	47.85
17	1980-81	98.351	34.462	-	132.813	22.297	9.03	-	31.327	120.648	43.492	-	164.14	23.053	43.887
18	1981-82	101.815	34.357	-	136.172	30.781	10.438	-	41.219	132.596	44.795	-	177.391	24.914	47.43
19	1982-83	115.975	43.028	-	159.003	36.672	11.632	-	48.304	152.647	54.66	-	207.307	29.116	55.429
20	1983-84	122.395	43.77	-	166.165	36.043	10.925	-	46.968	158.438	54.695	-	213.133	29.934	56.987
21	1984-85	84.443	Canal closed	-	84.443	4.813	canal closed	-	4.813	89.256	Closed	-	89.256	12.535	23.865
22	1985-86	88.136	23.291	-	111.427	17.939	canal closed	-	17.939	106.075	23.291	-	129.366	18.169	34.589
23	1986-87	72	14.6	-	86.6	50	16	-	66	122	30.6	-	152.6	21.432	40.802
24	1987-88	13.34	9.98	-	23.32	8.79	18.2	-	26.99	22.13	28.18	-	50.31	7.066	13.451
25	1988-89	73.88	11.5	-	85.38	32.97	19.5	-	52.47	106.77	31	-	137.77	19.349	36.836
26	1989-90	65.15	37.09	-	102.24	50.07	23	-	73.07	115.22	60.09	-	175.31	24.622	46.874
27	1990-91	57.64	30.45	-	88.09	55.7	23.5	-	79.2	113.34	53.95	-	167.29	23.495	44.729
28	1991-92	50.4	30.71	-	81.11	55.65	28.2	-	83.85	106.05	58.91	-	164.96	23.168	44.106
29	1992-93	70.49	31.57	-	102.06	55.29	19.98	-	75.27	125.78	51.55	-	177.33	24.905	47.414
30	1993-94	62.7	46.55	10.5	119.75	49.88	24.32	3.5	77.7	112.58	70.87	14	197.45	27.731	52.794
31	1994-95	63.46	40.84	11.08	115.38	46.53	17.53	3.65	67.71	109.99	58.37	14.73	183.09	25.714	48.954
32	1995-96	68.49	36.43	17.04	121.96	38.02	12.37	10.31	60.7	106.51	48.8	27.35	182.66	25.654	48.839
33	1996-97	53.97	36.48	13.76	104.21	37.08	13.97	7.52	58.57	91.05	50.45	21.28	162.78	22.862	43.524
34	1997-98	62.85	35.68	13.75	112.28	31.37	13.87	7.52	52.76	94.22	49.55	21.27	165.04	23.179	44.128
35	1998-99	51.83	24.43	11.67	87.93	23.01	10.06	7.17	40.24	74.84	34.49	18.84	128.17	18.001	34.27
36	1999-00	71.13	4.48	-	75.61	20.2	0.15	-	20.35	91.63	4.63	-	96.26	13.519	25.737
37	2000-01	121.92	13.67	-	135.59	-	-	-	-	121.92	13.67	-	135.67	19.054	36.275
38	2001-02	143.23	50.37	-	193.6	-	-	-	-	143.23	50.37	-	193.6	27.19	51.76
39	2002-03	92.04	28.03	-	120.07	-	-	-	-	92.04	28.03	-	120.07	16.86	32.1
40	2003-04	98.89	43.08	-	141.97	-	-	-	-	98.89	43.08	-	141.97	19.94	37.96
41	2005-05	91.56	Canal closed	-	91.56	-	-	-	-	91.56	-	-	91.56	12.86	24.48
42	2005-06	-	-	-	0	-	-	-	-	103.66	45.51	-	149.17	20.95	39.89
43	2006-07	-	-	-	0	-	-	-	-	80.68	43.45	-	124.13	17.43	33.19
44	2007-08	-	-	-	-	-	-	-	-	90.97	45.21	-	136.18	19.13	35.41

* Between 1964 till March 1968 the propsed command area of EKMC was only 5.69 lh. It improved to 7.12 lh after Rajpur Canal was commissioned in 1968.

Its Conclusions

The Kosi Irrigation Committee prepared fresh maps of the Kosi command on a scale of 1:36000. On them it marked the human settlements, the areas where the canal water could not reach at all, areas that were higher than the full supply depth of the canals, areas that were waterlogged and did not require any irrigation, areas that were lower than the canals but did not require irrigation during a drought and areas that were lower than the canal and needed irrigation. All these classes of land were marked on the map. Having done this, it tried to identify the areas where agriculture was possible in the EKMC and the Rajpur Canal system.

The Committee submitted its report on March 19, 1975. It found that within the command areas of the EKMC and the Rajpur Canal, agriculture was not possible over an area of more than 440,000ha.[11] In the original plan of the scheme, the net cultivable command area was 612,000ha, while the gross cropped area was 712,000ha. Looking into the practicality of irrigation and agriculture, the Committee suggested that irrigation planning be done only for paddy and wheat. The Committee further suggested that not more than 65 per cent area under cultivation (440,000ha) could be irrigated under the kharif paddy (2.86ha) and 20 per cent under wheat (0.88ha) bringing the gross crop command area from the Kosi Canal to 3.74 lh.[12]

Thus the Kosi Irrigation Committee lowered the irrigation target of the Kosi Project to shightly more than half (52.53 %) from 712,000ha to 374,000ha. It was able to slash the targeted area by excluding, (a) Those areas where the water of the Ganga spilled; (b) The bigger cities and towns that did not come in the command area of any of the canals; (c) The water-spread area of many channels abandoned in the command area. It found that 82,270ha were habitations and orchards, 100,000ha were higher than the canal and no water could reach there, 49,400ha were waterlogged and would never require any irrigation, 57,300ha would require irrigation only occasionally and 16,300ha could not be irrigated for other reasons.[13] Obviously the original plan had only made a crude estimate of the command area.

The Committee said that an irrigation potential of 253,000ha had been created till then and the maximum area that the canals had irrigated was 185,000 ha.

It was not in the terms of reference of the Kosi Irrigation Committee to identify who was responsible for this debacle. Its conclusions and recommendations created a win-win situation for all concerned, except the farmers for whose benefit these canals were built. The Committee did not say explicitly that the maximum irrigation recorded by the Kosi Project was only 28 per cent (1972-73) of what had been told to the people in 1953. By slashing the target area, it gave an opportunity to the engineers to boldly assert that despite all the criticism by the laymen and drawbacks within the system, they had irrigated half the target area and had utilized nearly three-fourths of the potential created, within just ten years. It suited the politicians also to say the same, leaving the farmers to face the music.

It does not take much to grow a crop of data. It neither needs any water, nor does waterlogging or sand casting hamper its growth. The report of the Committee was sensational by any standards. It also turned out to be gold mine of information about the Kosi Project. By the time it could evoke a public debate, the Indira Gandhi government in New Delhi clamped a state of emergency in India, scuttling all debates in the country. Those concerned with the project and its performance slowly forgot the findings of the report and the command area set by the Committee became the standard.

A glance through the actual irrigation data from the EKMC, since its commissioning, shows that in the past ten years, between 1998-99 to 2007-08, it was only in 2001-02 that the actual irrigation from the project had a peak value of 27.2 per cent of the original target. In the remaining years, excepting 2005-06, the coverage was less than 20 per cent. The canal was closed for de-silting during the rabi season of 2004-05 and the irrigation in 2005-06 was only 21 per cent despite the de-silting and despite it being a drought year, when the farmer needed more water from the canals.

It is also worth noting that the Committee had observed that an irrigation potential of 253,000ha had been created by 1975. Thus, Lahtan Choudhary's statement (May 28, 1970) in the Vidhan Sabha that an irrigation potential of 648,000ha had been created was not the truth.

Reasons for Not Utilizing the Irrigation Potential

The Kosi Irrigation Committee cited many reasons for the poor utilization of the created irrigation potential. These were: [14]

1. The first problem was the location of a powerhouse in the main canal. After meeting the requirements of the canal bed slopes, a head of about 4 meters was available in the EKMC. It was thought that this head could be utilized for producing hydro-electricity. Four turbines were installed in a powerhouse located within the EKMC to produce 20 megawatts (MW) of power. The water emerging from the turbines was to be used for irrigation. Thus at a designed discharge of about 425cumecs, all the turbines would function, at an input flow of 106cumecs each. Theoretically it was a very sound proposition. The fact, however, was that should the turbines become inactive

for some reason, the powerhouse and the canal would both become inoperative. This happened regularly and either the canal had to be closed or run below its capacity to the detriment of irrigation. A bypass channel was proposed by the Committee to make the canal and the powerhouse run independently of each other. Since the powerhouse was located within the canal, it was not possible to run the canal at its rated capacity of 425cumecs unless all the four turbines of the powerhouse were in place. When less water passed through the generators, a lot of sand and aquatic weeds entered them and jammed them, resulting in the closure of the powerhouse. The construction of the powerhouse started in 1964 and it was expected to be completed by 1965 but the machinery that was being shipped from Japan was confiscated by Pakistan during the war with India that year. Somehow, power generation started in 1971-72 when it was found that only 215cumecs of water could pass through the turbines at a head of 4 meters. This meant that even under most favourable conditions, the powerhouse could only be run to half it's capacity. Later a bypass channel had to be constructed to make the canal and the powerhouse independent of each other.

Any power project that is linked to irrigation, as a rule, has an irrigation canal built independent of the powerhouse. It is intriguing why this simple rule was ignored by the planners of the Kosi Project. The 68th Estimates Committee of the Fourth Lok Sabha posed this question to the authorities of the Kosi Project who said that the issue was discussed in great detail earlier but constructing a bypass channel meant an additional cost of Rs 20 lakhs and hence the idea was dropped. It was further explained to the Committee that just as the powerhouse was located in the canal, the irrigation in the first year suffered badly and in the subsequent years two bypass channels had to be built. The project authorities defended themselves by saying that the fault did not lie with the planning of the project but because of considerable delays in phasing of the work, ordering the generators and confiscation of machinery by Pakistan. These events were entirely unexpected, the authorities felt. The Committee recommended speedy construction of the bye-pass channel.

2. The soil of the command area of the EKMC is alluvial and a large quantity of water seeped through the canals. The estimated seepage was far less than the actual.

3. The sediment load in the canal water too, was more than the estimated amount. This led to silting of the beds of the canals and choking their mouths.

4. Farmers rejected the crop planning of the engineers that was made at the time of the inception of the project.

5. Waterlogging of 124,300ha was observed along the canals during the rabi season. It was even more during the kharif. Since there were no arrangements to drain this water, agriculture and irrigation both suffered.

6. In the absence of *Chakbandi* (land consolidation), it was difficult to provide water to all the fields.

7. Land measuring 307,000ha was undulating in the Kosi Command and unless this land was made plain, delivering water everywhere was not possible.

8. Absence of field channels and field drains.

9. Poor maintenance of the canals.

10. Problems in operating the canals.

11. Farmers' lack of knowledge to grow appropriate crops in the irrigated areas.

12. Fixation of irrigation rates and the difficulties faced by the farmers.

The Committee gave recommendations to correct these problems but they were not taken very seriously as reflected in the poor subsequent growth of irrigation. A drama in the name of 'Kosi Kranti' was, however, enacted following the withdrawal of the emergency in 1977. This was the time of the 'second freedom' and the Janta Party government was in power, both in the state as well as at the center. The 'concept designer' of the Kosi Kranti was the famous journalist, B.G.Verghese, and the political head of the Bihar Government was Karpoori Thakur.

5.4 The Bugle of the 'Kosi Kranti'

This programme was begun as a pilot project for the multi-disciplinary development of Banmankhi, Bhawanipur, Dhamdaha, Barahara and Rupauli blocks of Purnea district This area was located between the command areas of the Jankinagar and Purnea branch canals of the EKMC. Purnea district had been a highly fertile place for movements and it had been a fort of sorts for farmers' movements. The share-croppers of Purnea had successfully fought for their Shikmi rights in the 1950s. Purnea had the rare distinction that 53 per cent of its population attached to agriculture were landless and 40 per cent of the farmers were share-croppers. It was difficult for the farm labourers of Purnea to find employment for more than 150 to 180 days in a year and their wages were only Rs. 4/-per day whereas legally they should have been Rs. 5/- per day. The main objective of the 'Kosi Kranti' was "…to seize the bull of feudalism by its horn by combining the power of the people with that of the state."[15] It did not limit itself to land reforms alone but it aimed to bring about the social and economic development of the peasants by ensuring them the benefits of the irrigation potential created by the Kosi Project.

The Kosi Kranti resolution maintained that agricultural and rural development was not possible simply with the availability of resources, i.e., capital, manpower, technical expertise and infrastructure, etc. unless the people were motivated. It emphasized that the problems faced by the small and marginal farmers had to be studied in greater detail. It also suggested that complex administrative procedures linked to the provisions for loans and marketing facilities for the farmers needed to be simplified by 'efficient management systems'. This would require an integrated support system which would concentrate not only on achieving the targets but would have 'human beings' at the center of all its activities. This whole idea of a 'functional Gandhian alternative' was conceived by B.G.Verghese so that the benefits of regional development reached its rightful owners.[16] The programme had the blessings of Jay Prakash Narayan and his concept of total revolution was well embedded in it. Many celebrities were associated with this 'Kranti' as it was a very ambitious programme that symbolized 'freedom'. It was begun almost immediately after the lifting of the emergency. The people were also very enthusiastic about participation in the government programme and its successful implementation became a prestige issue for all concerned.

Some of the main features of the 'Operation Kosi Kranti' were:

1. All out efforts on agricultural reforms
2. Execution of on-farm development schemes
3. Health programmes
4. Education programmes
5. Construction of roads and other means of communication
6. Encouragement to rural industry
7. Development of proper marketing facilities
8. Initiating multiple-cropping, etc.

The Chief Minister of Bihar, Karpoori Thakur, inaugurated the Kosi Kranti at Banmankhi (Purnea) on January 26, 1978. In this ceremony, dreams of 'Kosi Kranti', 'solution of the unemployment problem', 'green revolution', 'social justice', 'ownership of land', etc. were sold to the people and the people, in turn, sought assurances from the leaders that their words would soon be translated into action. (See Box next page: 'Kosi Kranti was a serious initiative')

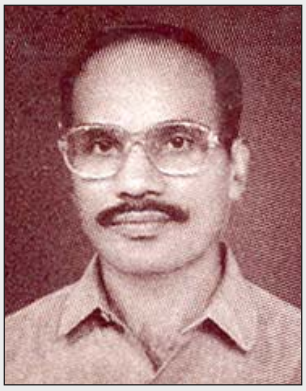
Unfortunately, almost within one year of the initiation of this programme, the Kosi Kranti started withering away. Land is a very sensitive issue and in a place like Purnea district, it is even worse. When the survey of the land and its records started in Purnea, it led to turmoil in the district. The Kosi Kranti charter wanted to simplify administrative procedures and make the bureaucracy people and society centered. But the latter was only superficially oriented towards the people or the society. Its unwritten sympathy and collusion lay with the landlords. Its own interests could never be served by helping the poor.

By this time, the impact of the Emergency was fading away and the debate about the Kosi Project debacle was also picking up slowly. When the bugle of the Kosi Kranti was being blown, the central government had asked the Bihar government to modernize the plans of the Kosi canals. It was certain, by this time, that the Kosi Project had proved to be totally useless and it was irrigating only 25 per cent of its target and that 75 per cent of the irrigation potential that was created by it was unutilized. In the directives of the central government, it was explicitly mentioned that the modernization plans should be drafted only after 'careful study of the discrepancies in the project and detailed information about the irrigated area at every outlet. The *Indian Nation*, Patna edition, in its editorial dated February 18, 1980 wrote, "What is known is that the affairs of the Kosi Project lying in shambles for a long time continued to worsen and the 'Kosi Kranti' turned into a hoax as did Mr Thakur's most schemes for development and creation of employment opportunities……The Congress rulers ruined the project, set up a large number of technical, administrative and political committees to find remedies and failed to take measures to revitalize the project. And considering the record of performance of their successors who came to clear the debris but raised mountains of it everywhere, it is futile to expect any improvement at present in the working of the Kosi Project or any other development authority."

The government kept on harping about the successes of the Kosi Kranti. On paper things were moving with great speed but there were no results on the ground. The local farmers were quite apprehensive about the land ownership surveys. Large-scale complaints of corruption started pouring in. The Janta Party MLA, Shaligram Singh, cautioned the government that if the farmers were humiliated in the name of correcting records, the 'Kosi Kranti' would be converted into a 'Bloody Kranti.'[17]

The official propaganda was also at a peak. On July 24, 1978 the Chief Secretary of the state, K. A. Ramasubrahmanyam, told a press conference in Purnea that work on various drainage schemes had already started under the Kosi Kranti programme. He said that 7,000ha of land from a 10,000ha *chaur* (a natural depression) had been drained out and work on another *chaur* of 12,000ha was likely to be started soon.[18] The truth, however, was that none of this ever happened on the ground, it was only on paper![19]

Kosi Kranti was a Serious Initiative



"Karpoori Thakur came to power after the emergency in 1977. Those days, the Association of Voluntary Agencies for Rural Development (AVARD) became a very important institution. The Planning Commission had assigned AVARD a micro-level planning (project) for the development of 39 blocks of the country. Its team those days had veterans like B.G.Verghese, Pyare Mohan Tripathi, A.C.Sen and Arun Shourie besides many others. They met with Jay Prakash Narayan in Gandhi Peace Foundation and prepared an outline of the Kosi Kranti.

AVARD wrote to the A.N.Sinha Institute in Patna for an expert who was conversant with economics and sociology and had Gandhian leanings. That is how I was selected as a team leader for preparing the plans for the Kosi Kranti. Besides me there were three engineers / agriculture scientists, an expert on agriculture – R.K.Agrawal, 17 economic supervisors, one animal husbandry expert, and three geographers. Our team stayed for about a year and a half at the Khadi Bhandar in Rupauli, where our office was located. A well-known social worker of the area, Baij Nath Choudhary was also there to help us. His stature was in no way less than Dhiren Majumdar or Thakur Das Bang. He had a very impressive personality. Apart from this, the Government of Bihar appointed Shankar Prasad IAS as a special officer for the Kosi Kranti to set right the land records. K.B. Saxena IAS, joined us as special secretary-labour. Both these officers were known for their integrity and devotion to work and it was impossible to corrupt them.

In choosing these five blocks of Purnea, Karpoori Thakur might have targeted a powerful landlord of that area. If Karpoori Thakur had succeeded in correcting the land records there, it would have been a feather in his cap. JP had been associated with the Bhoodan Movement and he wanted that the land of the landlord should be distributed among the peasants as he had not responded to the call of Bhoodan in the state when JP was associated with it. Thus, on paper, the plan was of Kosi Kranti but, politically, it was the landlord who was targeted. Karpoori Thakur was a seasoned socialist and his interest naturally lay in the small and marginal farmers.

We first surveyed the land and then studied the problems of floods, waterlogging, availability of irrigation, and the agricultural pattern. The LRDC of Purnea, the Collector and Shankar Prasad (IAS) helped us a lot in our efforts. We prepared the social and economic profile of all the five blocks and explored the possibilities of employment. We also prepared the details of agriculture and animal husbandry. The government was eagerly waiting for our report and our recommendations.

These plans were ready three months prior to JP's death and we dedicated it to him. Karpoori Thakur collected these reports from the Mahila Charkha Samiti in JP's house in Patna. He praised our efforts. At the field level, there was no interference from the landlord but he was not prepared to part with his land at all. Once, there was a dispute regarding the status of the share-croppers and the landlord paraded over 1,000 labourers immediately and asked the officials to enquire whether they were getting fair wages and the government approved labour rates from him or not? Nobody came forward to give any evidence against him. When there was no dispute between the landlord and the labourers, there was hardly any role for K.B.Saxena, the labour secretary, and there was no role left for Shankar Prasad either as all the land of the landlord was legally under ceiling. Otherwise also, there were 10 or 11 IAS/IPS officers in the landlords extended family and he commanded a very respected position in that area. Anybody would think twice before rubbing against him for everybody knew that the landlord would be there while the continuance of Karpoori Thakur government was always doubtful.

Our job was to prepare plans for the project. It is very difficult for me to say why the plans fizzled out. We had nothing to do with its implementation. I also do not know whether those plans were executed at all but all that I can say now is that the Kosi Kranti was a serious initiative.'

— Narrated by Prof. Anirudh Prasad, Dean-XISS, Ranchi

Further, it was expected that most of the investments in these agricultural development schemes would come directly from the government in the form of grants. Slowly it became clear that at least in 40 per cent of the schemes, the money would come from financial institutions in the form of loans. Banks and other such institutions did not show any interest in the schemes and the farmers were also not very keen on taking fresh loans in the name of agricultural development. Many farmers had not returned loans taken earlier and were defaulters. They were not entitled to any fresh loans until they cleared the ones taken earlier. The problems of share-cropping were over and above all these issues.

The result was that within a year the Kosi Kranti breathed its last. Karpoori Thakur's government too

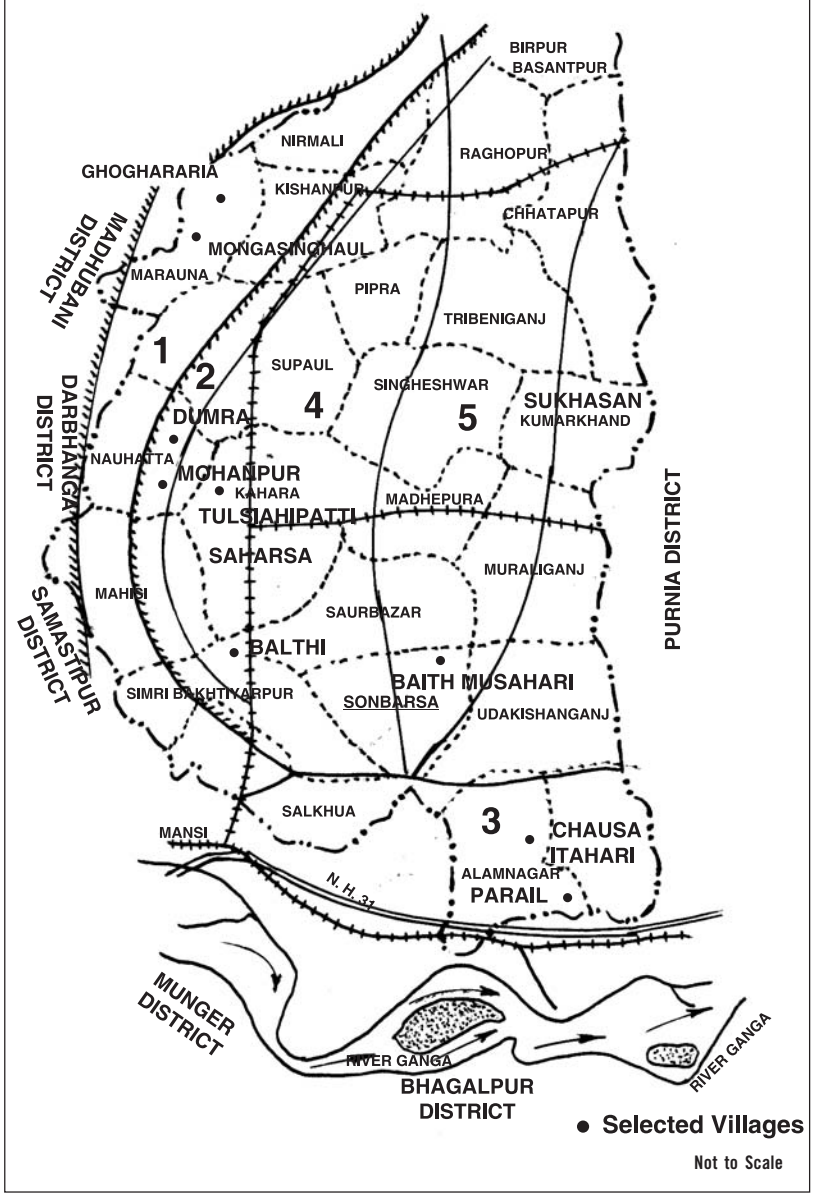
fell on April 21, 1979 and with that, whatever interest the government had in the project, it came to an end. The Collector of Purnea, M. K. Das, officially performed the last rites of the Kosi Kranti, on April 21, 1982 by terminating the services of 37 workers of the project.[20]

5.5 Evaluation of The Kosi Project by the Planning Commission of India

The Programme Evaluation Cell of the Planning Commission of the Government of India conducted an evaluation study of the Kosi Project in 1977-78 to find out whether there had been any increase in the income and employment opportunities of the people in the Kosi basin following the construction of the embankments. Had land prices risen or the communication system improved? What had been the impact of the project in promoting health and sanitation and on the overall development processes?[21]

The evaluation team divided the area within and outside the embankments into five major zones (Fig. 5.2): (1) Villages trapped between the embankments; (2) Villages outside the eastern Kosi embankment but within a distance of 5 km from it; (3) Villages located at the very end of the embankment; (4) Villages that were hit by the floods of 1948 but not included in (3) above, and (5) Villages trapped in the floods of 1954 but not included in any of (1) to (4) above.

Fig. 5.2 : Different zones of study of the Kosi Project by the Planning Commission



The evaluation team concluded that a sum of Rs. 40.32cr had been spent on the embankments till 1978 and they had protected an area of 160,000ha against recurring floods and because of them an annual loss of property worth Rs. 6-10cr had been prevented. The team found that the embankments had led to a marked improvement in fisheries, communication had improved, there had been plantations on the canal banks, cottage industry had come up, the general health of the people occupying the basin had improved and there had been an increase in land prices. Although, an average sum of Rs. 1cr was spent annually on the maintenance of the embankments, this investment was necessary to ensure the said benefits.

The report, however, made shocking revelations as far as agriculture was concerned. It said that even 20 years after the construction of the embankments, the anticipated agricultural development had not taken place. Interestingly, according to the report, the cultivated area within the embankments nearly doubled but the cultivated area in the protected countryside in zone (2) had reduced considerably because of waterlogging. There was an almost uniform decline in the per hectare yield of paddy. The area under paddy increased between the embankments but the yield suffered because of sand casting there. There was minimal use of chemical fertilizers and use of organic fertilizer was almost non-existent.

The team was generally satisfied with the flood control part of the project but till then the breaching incidents like those of Bahuarawa (1981) and Hempur (1984) had not taken place. It was also intriguing that breaches of the embankment at Dalwa, Jamalpur, and Bhatania found no mention in this report.

5.6 The Present State of the Eastern Kosi Main Canal

Till 2004 the EKMC was filled with sand. In the Birpur division of the Kosi Project, where the canal took off upstream of the barrage, it was filled up to the full supply depth and any attempt to extract sand from its bed was futile. Locating sites where this sand could be dumped was a real problem. The canal had a capacity to discharge 15,000 cusecs (nearly 425 cumecs) of water but it filled up to the brim with just one-fourth of the designed quantity of water (100 to 125 cumecs). Since the canal was full of sand up to the designed depth, it was not possible to release much water into it. Unless the sand was removed nothing could be done and there was little chance of removing the sand.

Towards the end of 2004, an ambitious programme to desilt the EKMC was begun by the Water Resources Department of the Government of Bihar at an estimated cost of Rs. 54cr. This job was completed by June 2005 with the help of 4,000 tractors. It was expected that once the canal was desilted there would be a marked improvement in its performance as it would be possible to operate it at its rated capacity. Only time will tell the impact of desilting the canal. The irrigation figures for 2005-06 and 2006-07 fell below expectations, even though these years were a drought year in Bihar and farmers ought to have taken water from the canal. What are visible now are heaps of sand on either side of the canal, dug out from its bed. Farmers along the canal indicate that they have not faced any problem with these fresh heaps of sand so far because all that sand is dumped on land which belongs to the canal authorities but they hasten to add that if any further desilting is done in future, their lands will be hit. Also, a significant quantity of sand flows back into the canal during the rainy season.

We will have to go back a little to understand the sand problem of the Kosi canals. We have already read that the average annual sediment load in the river is such that if we construct a bund of 1m width and 1m depth cross section, it will go round the equator nearly three times. When the river reaches Birpur with so much sediment, it is checked by a barrage that is over one kilometer long, with 56 gates. Part of its load of sand is deposited in the reservoir created by the barrage. The remainder passes underneath the barrage and either finds its way to the sea via the Ganga or gets deposited between the two embankments. The component of the water that enters the canal deposits its sand in the canal bed. A portion of this sand may reach the fields along with the irrigation waters. For smooth functioning of the canals, their beds have to be cleared from time to time as routine maintenance.

Desilting of the canal beds became an industry in the Kosi Project after the canal was commissioned. While farmers were worried about the malfunctioning of the canal and the deposition of sand in their fields, there were people who found it beneficial to have sand in the canal waters. They wanted the canal bed to be silted up so that they could make money by clearing it away. Thus, on one hand there were engineers like A.K.Mitra and S.K.Jain who were sincerely trying to reduce the sand content in the canal by regulating its flow, vested interests wanted it otherwise. A silt ejector was also installed later, but it was allowed to die slowly. Had this structure worked properly the problem could have been reduced, to an extent.

The sand issue and the Kosi Project were discussed in great details in the 50th and the 53rd Reports of the Estimates Committee (1972-73) of the Bihar Vidhan Sabha. These Reports created political turmoil in the state as they revealed large scale corruption in the desilting programmes, citing names and amounts paid to the contractors along with their political connections. Summing up its findings, the 53rd Report said, "Thus, we have mentioned only a few cases of mismanagement and swindling of the government money in the Birpur Division in desilting the canal beds. If an in-depth enquiry is made into the affairs of this division, thousands of such examples will be available that we have not been able to report because of paucity of time and investigation. It is necessary to mention that these cases of misappropriation relate to the desilting of the main canal only but there are more frightening stories of loot in the flood control sector, protective works and the Rajpur Canal, in the Raghopur Division. This is what the Committee came to know from the people's representatives here. But despite our best efforts, the Committee could not procure the papers related to the desilting and repairs in the Raghopur Division and, hence, could not investigate the files and come to any conclusion regarding defalcation of government money."[21]

Thus, a lot of irregularities were committed in cleaning the canal beds. The silt ejector that was constructed to reduce the sand content in the canal water got buried in it. The practical loss due to the malfunctioning of the silt ejector was that the capacity of the canal was reduced by 2,000 cusecs (57cumecs) and its discharge carrying capacity came down to 13,000 cusecs (369 cumecs) which meant that 200,000 acres of land (nearly 81,000ha) was deprived of irrigation. (Otherwise too, it was only on rare occasions that the flow in the main canal touched the magic figure of 10,000 cusecs or 283 cumecs.)

The Water Resources Department of Bihar had been struggling for resources for a long time and it was finding it increasingly difficult to maintain the main canal. When water cannot be conveyed through the

main canal, there is no question of any water getting into the branch canals, minors or distributaries. It is hoped that desilting the main canal would at least ease the situation for a while. The improvement will only be temporary in nature as, given the sand content in the river, the canal will again get filled with sand.

The EKMC runs in a south easterly direction, almost at right angles to the drainage line in the area. The canal acts as a barrier to the surface run-off and various streams that come to it from the north. The waterways provided through the siphons are inadequate and there is a backwater build up on the northern side of the canal. The combination of rainwater and the backwater makes the canal vulnerable to breaches and such accidents are not uncommon. Sometimes the villagers, who are hit by the stagnant water, cut the canal to drain the water out. Many villages in the blocks of Basantpur, Chhatapur in Supaul district and Narpatganj in Araria district virtually float around because of this stagnant or gushing water, as a result of the breach. The stagnant water drowns villages from Bishunpur in the west to Balua (village of the former Chief Minister, Jagannath Mishra), Thuththi, Madhura and up to Bathnaha in the east and the area stays waterlogged for a long time. The crisis is at a peak for about a-month-and-a-half. Breaching or cutting of the canal is a routine affair in Araria and Purnea. The canal was cut by the irate villagers of Dhanuk Toli near Thuththi village in 2002. People know that the canal is closed every Monday for flushing the Kataiya Power House that is located within the canal. The canal remains dry that day and is a perfect target to affect a breach.

Water from the villages of Lakshmipur, Mirzapur, Moudhara, Tappu Tola, Milki Dumaria, Navtolia, Mangahi and Santhali Tola in Phulkaha *Thana* of Narpatganj block is drained through a siphon constructed on the Kajra Dhar. The bed level of the siphon is too high and the water does not get fully drained. Even otherwise, the siphon is undersized for the flow in the Kajra Dhar. With the release of water in the canal and building up of pressure, a breach occurred in its right bank at Mirzapur. This, however, did not solve the problems of the people in the countryside of the left bank of the canal and they geared up to breach the canal.

Just as news spread that the canal was likely to be cut, villages located south of the canal, Garhia, Khaira, Chhanda and Dhanakahi of Narpatganj block, collected on the other bank to stall its cutting. These villages would simply get swept away if the southern bank of the canal breaches, because of the water gushing into the canal from the north. Both sides were armed and the canal was separating them. The canal, however, was cut. Police cases were filed. The village elders sat together to sort out the issue. Then came the officers of the Kosi Project and a consensus was reached that the canal would not be cut in future provided the cases were withdrawn. The staff of the Kosi Project lives in a colony in Chhanda village. After the canal was cut, the overseer of the project arrived at the scene. Villagers of the south side caught hold of him, manhandled him and locked him in a house. Officers from the Kosi Project had to come and get him released.

People from these villages are demanding a sluice gate to drain the accumulated water so that they are spared of the trouble of cutting the canal but there is no taker for their proposal. Problems are also faced in draining the Sursar Dhar. The inhabitants of Mangahi village shift to Bathnaha Colony during the rainy season and all other villages perch on the canal embankment with all their belongings and their cattle.

This is the story of the entire EKMC. Should the canal breach at any point, irrigation beyond it becomes impossible, at least till the next season. The hillocks of sand that came up along the main canal in 2005 will offer greater resistance to the rainwater coming from the north. Thus waterlogging north of the EKMC is going to be more acute in the future as will be the feud between people on either side of the canal. It is also disturbing to note that earth work worth Rs. 54cr was executed in desilting the canal but local labourers did not get any employment as all the work was executed with machines, mainly tractors, brought from outside.

A team of Japanese engineers visited the Kataiya Power House in December 2003 to explore possibilities of renovating the plant. The capacity of the plant had slumped down to just one megawatt by that time. Nothing has happened after that visit.

5.7 The People's version of the Irrigation Facility

When the main canal suffers from such problems, the status of the other canals is anybody's guess. The agricultural land of Mishri Lal Singh, a resident of Nathpur village in Narpatganj block of Araria district lies in the command area of the Murliganj Branch Canal. He says, "Yes, we do have our farms and irrigate them, but not with the water of this canal. It is about five years now since we received any water from it. Now we transplant our paddy with the help of a bore-well. There are about 25 bore-wells in our village and that includes bamboo wells. Once drilled, they last for three years. Some ten years ago, water used to come in the canal in the kharif season and was a help. In the rabi season it didn't come even earlier and we were prepared to handle the situation. Just close by, there is Buchaha Minor and water never came in that canal since it was dug. Most of the branch

Sunflower farm near Majhwa - Kosi Canal has no contribution in it.

canals, minors and distributaries are filled with sand and water cannot advance in these canals even if they release it from the headwork. Now there is no water in the canal so how can we intercept it? The department charges Rs. 75 per acre for irrigation that is not provided to our fields. Whether water reaches the fields or not, notices come and we are compelled to deposit the same because nobody would like to be humiliated before the entire village by the butt of the rifle. Money has to be parted to keep one's prestige intact. So many times we have complained about this to the Circle Inspector. He directs us to the Amin and the Amin tells us that there are orders from above and he cannot help, the money has to be deposited. We are poor people and we cannot afford to contest the case and deposit the money quietly."

Shyama Nand Goswami, a farmer from Majhawa village in Purnea district tells a similar story, "The canal that passes through our village originates from the Kursela Sub-branch Canal near the Barkona sluice. Water used to reach its tail end until a few years ago. The canal is now closed since 5-6 years. Whatever irrigation is done in the village is through the 'engine'. The canals are either broken or jammed and their outlet is blocked. Only those villages that are close to the big canal may get some benefit from it….we do not benefit from this canal in anyway. It does not contribute to our agriculture in any manner. We treat the irrigation tax that is levied on us as an agriculture expense and add it to the production cost. Just as we spend money on seeds, fertilizers, diesel and pesticides, we spend some to deposit the irrigation tax without making any fuss. We deposit the money promptly to keep the ghost of the irrigation department away from us."

These farmers are a harassed lot as far as payment of the irrigation charges are concerned because not only do they have to part with their money for services they never get, but they also have to tolerate the bullying of the revenue personnel and the police. Residents of Rajni Babhangama village, in Madhepura district that falls in the command area of the Janki Nagar Branch Canal say that, "It is the job of the Circle Inspector to assess the tax on irrigation. He does it by sitting in his office or his home. From there he fixes the Khasra and the Khatian of our fields and instructs the Amin to ascertain the extent of the irrigated area. The Amin, in turn, does the job sitting at his home. He knows the area since the irrigation started and fills the tax papers according to his own sweet will. The notice goes to the original owner even if the land is sold out to some other person. The Circle Inspector only comes to know of the sale when the original owner approaches him with a complaint. The government people are Nawabs, they are not bothered about petty things like transfer of lands."

While the farmers are in a thick soup, let us see what the Government is doing. The annual report of the Water Resources Department of Bihar (1999-2000) says, "Prior to 1991-92, the collection of the revenue was nowhere near the target but from 1991-92 till 1995-96 standards have been set for the collection of revenue as a result of tightening the revenue administration."[22] Obviously, effective revenue administration simply means more revenue collection, even if farmers are forced to pay bogus bills of the Water Resources Department. The collection drive of the Water Resources Department is in no way different from the sterilization campaign of Mrs. Indira Gandhi's hated Emergency days. In both these cases the government patted its own back. And what is the cost of such collection? This is revealed in the CAG Report of 1996. It says, "The assessment and collection of irrigation tax was entrusted to the Directorate (Revenue). To carry out its activities in the 18 divisions of the Directorate, 15 Deputy Commissioners and 3,540 staff members were appointed. It was revealed after the audit that between 1991-92 and 1995-96, this Directorate had collected only Rs. 39.23cr (a previous balance of Rs 28.05cr and the current demand of Rs. 11.10cr) against the balance due of Rs. 100.28cr. The establishment cost of the Directorate during the same period was Rs. 77.21cr."[23]

Obviously, this money was collected from poor farmers like Mishri Lal Singh as rich farmers could exercise their influence in evading the taxes. A detailed report is available on the mismanagement of revenue collection in the Kosi Project.[24] It is also obvious that the revenue collectors are having fun at the cost of the farmers of the region, as the establishment cost on them is double the revenue they collect.

It is not only the revenue collectors who are enjoying life at the expense of the farmers, the engineering and other staff of the Kosi Project are equally endowed. Table 5.2 shows the expenses incurred on engineering works in the EKMC and its establishment cost for some years. It is shocking by any standard.[25]

Table 5.2: Expenses on the Kosi Project between 1991-92 and 1995-96

Year	Actual Expenses on Works Rs. (in lakhs)	Establishment Cost Rs. (in lakhs)
1991-92	0	593.06
1992-93	0	749.29
1993-94	0	986.84
1994-95	0	883.32
1995-96	0	1085.44

Obviously when the farmers of the Kosi region were being hit by the butts of police rifles and their cattle were being taken away, the staff of the Kosi Project were drawing their salaries sitting at home, as there was no work for them to do.

The Kosi canal system is a peculiar blend of bad planning and inaction. A resource crunch adds to its woes. Wherever one goes in its command, one can find people ready to narrate stories of their disenchantment with the canals. The Saharsa Sub-branch Canal crosses the Saharsa-Supaul road near Thalaha village, some 8km south of Supaul. The villagers say that the canal contains water only in the month of August and for the rest of the year it is dry. When water is needed, the canal runs dry and when the entire area is flooded, one can take as much water as one wants from the canal.

From Supaul to Bhelahi, on the right side of the road, is the Maricha *chaur*. Its area may be about 280ha. Water accumulates between the Saharsa-Supaul road and the Kosi canal to a depth of over a meter, which destroys the paddy crop till Maricha and since the water does not recede till sowing time in the rabi season, the winter crops are also lost. As awareness grew about hot weather paddy, local farmers started growing it. The harvested paddy is literally 'chicken feed' and that too if water does not appear in the *chaur* till early July, otherwise it gets submerged. The villagers used to grow paddy, maize, wheat, groundnut, green gram and other crops here earlier. They approached all the leaders of the area for reviving their agriculture and got promises in return but no action was taken on the ground. Somehow, once, an executive engineer was moved by their plight and dug a drainage channel but that too got sandcast and clogged. That was the end of the story.

The situation with the Madhepura Sub-branch Canal is no better. In this canal, notices and bills flow instead of water. As one travels from Madhepura to Purnea, one can see the plight of the farmers around. Until a few years ago water used to reach the villages of Pithahi, Birania, Chakla, Sirpur and Garhia, but its supply has stopped for the past 4 or 5 years. The villagers apprehend that either the canal is broken somewhere upstream or farmers there have cut it to drain the accumulated water. They might have intercepted the canal water there, because it does not come here, they suggest. They also complain that if a breach occurs somewhere in the canals, the *karmachari* of the department ensures that the gap widens further. He can make more money out of an extended breach.

Irrespective of what is reported in official documents, the factual situation of the canals is as described here. Officials travel along these canals day and night but take no notice of the unfortunate events occurring around them. The situation is simply unacceptable.

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6
The Western Kosi Canal

There was no mention of the Western Kosi Canal (WKC) in the original 1953 Kosi Project proposal. Maps of the project published in newspapers in 1954 did not show any details of the canal or its headwork. When construction of the barrage started, however, near Birpur in the late 1950s, the headwork of the WKC were also constructed in case a canal was to be constructed on the right bank in the future. The headwork, located in Nepal, was completed along with the barrage in 1963 by India in anticipation of an agreement with Nepal. Interestingly, this construction was started in 1959 but a union minister Jagjivan Ram laid the foundation of the WKC in 1957, just before the general elections, for obvious political reasons. The foundation-laying ceremony raised hopes among farmers of Darbhanga and Madhubani sub-divisions of the then unified Darbhanga district, of receiving irrigation water once the canal was constructed.

6.1 Justifying the WKC

The Eastern Kosi Main Canal (EKMC) was a part of the 1953 project and its headwork, together with the entire reach of the canal, were located in India. This meant that decisions regarding the canal could be taken by India alone. There was also no dearth of money for its construction as it was a part of the original proposal. Its construction therefore proceeded on schedule.

The situation with the WKC was entirely different than that of the EKMC. The Kosi barrage starts from the Indo-Nepal border but is located entirely in Nepal. The headwork of the WKC was built near Bhardah on the right bank of the river (Fig 6.1) as an extension of the barrage. The WKC was likely to irrigate the lands of Darbhanga and Madhubani just as the EKMC was going to irrigate fields in Saharsa and Purnea districts. According to the Detailed Project Report of the WKC, the combined area of both these districts is 5780sq km and most of this is cultivable. The average annual rainfall in Darbhanga and Madhubani is normally sufficient for paddy by any standards, but since it is not evenly spread, paddy production becomes uncertain.

Irregular rainfall necessitates irrigation and the October rains (locally called *Hathia*) are very crucial for the paddy crop. According to available records of the previous 47 years, from 1911 to 1957, deficient rains in 8 years delayed sowing of the paddy crop; transplantation suffered in 19 years and the failure of October rains in 20 years caused paddy cultivation to suffer. The project report said that had irrigation been available, these losses would not have occurred. It further said that while the western embankment of the Kosi, the Kamla embankments and other embankments would make this area flood free (this was very strongly disputed by the local people), they would also create a need for artificial irrigation.

Another factor that weighed in favour of the WKC was that the October flow in the Kosi was around 30,700 cusecs and after allocating 17,000 cusecs of flow for the EKMC, there would still be water in the river that could be productively used for irrigating the floods protected lands located west of the western Kosi embankment. Unpredictable rains and availability of flow in the Kosi thus gave birth to the WKC.

6.2 Getting Nepal's Consent

The hopeful farmers of Darbhanga and Madhubani, however, were not as lucky as those in the EKMC command area. According to the WKC project proposal, along with the headwork, its first 35.13km were in Nepal. It meant that even if the Government of India (GoI) had the intention and the requisite resources to build the canal, it would require Nepal's consent for its construction. Since this was an international matter, only the GoI could take the initiative. Politics entered the scene here and the WKC was first used for election purposes in February 1957. Work on the construction of the barrage and the headwork of the EKMC started in 1959 but there was silence on the WKC proposal then. This caused frustration in the minds of those who dreamt of irrigation from the WKC. They felt that the Government had betrayed them and that the foundation laying ceremony of 1957 was only an eyewash.

In 1960, replying to a question by Radha Nandan Jha (MLA), Dr Shrikrishna Sinha, then Chief Minister

of Bihar, told the Vidhan Sabha that, "The regulator is a part of the Kosi Project and will be built along with the Kosi barrage. This regulator is meant for taking out water for the Western Kosi Canal."[1] Earlier, on behalf of the Bihar Government, Ambika Singh had also assured the House that contrary to rumours about the project being abandoned, the state government had not abandoned it.[2] The regulator was being built and a division had been created to look after the works ahead. Dev Narayan Yadav, a Deputy Minister, issued a similar public statement through the press that the project was still on.[3] Ram Charittar Singh, a former Irrigation Minister of Bihar, said in a press statement that the WKC was a part of the original scheme but no action was taken on it because of the government's dilly-dallying.[4] Lalit Narayan Mishra claimed that survey work and investigation of the project was yet to be completed and until then no work could start. Later on June 18, 1961 Dr Shrikrishna Sinha performed yet another foundation laying ceremony for the canal, this time near Sakri in Darbhanga district and repeated his assurance that the WKC would definitely be built.

An Emergency was clamped in India in 1962 because of the Indo-Chinese war but that did not deter the then Chief Minister, Binoda Nand Jha, from performing another political foundation laying ceremony near Bardepur village, in February 1962, just before the 1962 general elections. The only consolation this time was that the WKC had started taking some shape in government documents. In 1962 it was officially announced that the canal was estimated to cost Rs. 13.49cr and would irrigate 9,300ha in Nepal and 2,61,000ha in India. Providing for multiple cropping, it was likely to irrigate 10,500ha in Nepal and 325,000ha in India. Earlier the Government only needed Nepal's permission for constructing the canal. But now it also needed to raise Rs. 13.49cr toward the cost of the canal. Citing the sorry state of the country's economy following the war with China the Central Government bought some breathing time but the peace did not last for long.

The people's dissent had been simmering and it soon erupted. In January 1965, over 1,000 persons sat on a mass hunger strike at Darbhanga and on the March 8, 1965, a huge procession was taken out in Darbhanga to press for the execution of the WKC. Raj Kumar Purbe, MLA sought a calling attention motion in the Bihar Vidhan Sabha, saying, "In this very House, the minister while replying to the debate on the Governor's address had said that an agreement has been signed with Nepal regarding the Western Kosi Canal. Then the minister said that the agreement had not been signed, only negotiations were taking place and the agreement would be signed shortly. Such assurances are being given since 1956. This is a question of the entire population of Darbhanga. Shri Jagjivan Ram laid the foundation stone of the canal in 1957, then Shri Krishna Sinha did the same in Sakri in 1961…then Binoda Nand Jha did it..just ten days before the elections…and now we are told that Shri Lal Bahadur Shastri will do it once again. You cannot take the people of Darbhanga for granted. We know that you will take the help of the 9-BMP (Bihar Military Police) to crush the movement but that will not solve the problem."[5]

Foundation stone of the western Kosi Canal

Nepal granted permission in 1965 to prepare the designs of the WKC, putting some conditions and the then Prime Minister of India, Lal Bahadur Shastri, laid another foundation stone at Bhardah in Nepal on April 24, 1965. A revised agreement was signed between India and Nepal on December 19, 1966 and a revised Project Report was sent to Nepal on July 1, 1968.

6.3 Search for an Alternative Barrage at Dagmara

In 1966 the Government of India constituted a Committee under the Chairmanship of Kanwar Sain, former Chairman of the Central Water Commission (CWC), to look into the affairs of the Kosi Project and asked its opinion on its functioning. The reasons for the constitution of this Committee are not very clear but it appears that the government was concerned about the breach in the western Kosi embankment (1963) at Dalwa in Nepal and the subsequent attacks of the river on the western embankment near Kunauli in Saharsa district, very close to Indo-Nepal border. Another

reason could have been that the government was trying to pacify the people and the politicians who were agitated over the delays in the execution of the Western Kosi Canal. The Kanwar Sain Committee presented its report in the same year, 1966. Its main recommendations were: 1) To control the flow of the Kosi by constructing a barrage near Dagmara, 23 kilometers downstream of the Bhardah Barrage, 2) River training works be taken up immediately, 3) Dredging and bandalling to be done to for regulating the flow in the river, 4) Flood warning systems be developed and 5) Large-scale soil conservation works be taken up.

Of these recommendations, the Dagmara Barrage had a direct bearing on the WKC. If Nepal did not agree to the proposal of starting the WKC at Bhardah, it could be taken out from the Dagmara barrage, 23km downstream of Bhardah and exclusively in Indian territory.

Political Bickering and the Dagmara Barrage

For a long time there was complete silence over the proposal sent to Nepal. On July 12, 1967 Dr. K.L.Rao, the Union Irrigation Minister, said in the Lok Sabha while replying to a question by Bhogendra Jha, "With regard to …the second barrage, it has been examined in the model study and it has been found that in the interest of the safety of the area between Hanuman Nagar and Dalwa, it is better that the second barrage is not constructed. That is what the model study indicates."[6] Dr Rao repeated the same statement on the July 27, 1967 in the Lok Sabha and added that if a canal was taken out from the Dagmara barrage, the irrigated area would be reduced to half and the cost of the project would be disproportionate to the benefits accruing from it. It was a different matter altogether if the Dagmara barrage had to be constructed because no other alternative existed.[7] Most politicians in Bihar were not very happy with this statement of Dr. K. L.Rao and Bhogendra Jha MP expressed this in no uncertain terms. He said that the Government of India had only wanted to take up this project till such time as its party was ruling the state but when it was routed in the elections, he (Dr. K.L.Rao) was not even accepting the suggestions made by the state government.[8]

When nothing happened for the next six months, Bhogendra Jha made a scathing attack on the Union Irrigation Minister and said that, " The foundation stone was laid thrice but the digging of the canal has not yet started. After a lot of pressure, the government decided that a joint survey would be conducted by Indian and the Nepalese engineers. They surveyed it. The survey work was completed in Nepal in the month of June. We went to Nepal and tried to know about it from the Nepal government. We asked, have you given the permission. They said, we have not received the papers. When we asked the same question here, the answer was the survey reports are lying here. It has not been sent from here....Such avoidance will not work. I must say that those who are responsible for this (lapse) should be in jail. The Irrigation Minister should be in jail."[9]

The frustration of Rasik Lal Yadav (MLA) was of a different kind. He maintained that, "The ministers, state ministers and the administrators of the project are very witty persons. They say that it is a matter relating to Nepal. May I ask you, was the Gandak Project not related to Nepal? How was that problem solved? The work on the eastern canal was started in 1954-55 and here, it is not starting even after a lapse of 10-11 years. You please forget about the public but kindly do not cast a slur on the name of our great leader Shastriji."[10]

Hari Nath Mishra (MLA) in a press statement charged his own party's central government that after taking instructions from some Congress party bosses sitting in Delhi, it wanted to murder the Western Kosi Canal. He recalled an assurance of the central government in 1967 and said that since then 22 months had passed but the project instead of recording any progress had been relegated to a position of no consequence. The progress till then was that a survey report had been sent to the CWPC (Central Water & Power Commission) in October 1967 who, in turn had forwarded it to the Ministry of External Affairs in April 1968. The scheme was then sent to the Government of Nepal in an abstract form and the latter naturally asked for a detailed report. This was done later in 1968. No minister or any official of the state or the central government, however, considered it necessary during that period to fly to Nepal for discussions to resolve the difficulties. But the people of Bihar were expected to believe that in the absence of a clearance from Nepal, the canal was not being built, he said.[11]

Similar charges were labeled against Dr. K. L. Rao in the Bihar Vidhan Sabha also. Mahabir Prasad blamed him saying, "Only because of one person this work is not done… Had it been done earlier, we would have been spared the situation that we are in today. If this work is done now then Dr. K. L. Rao thinks that he will be held responsible. To hide his own mistakes, he is opposing (the) Dagmara (barrage)."[12] The same charge was repeated by Baidyanath Mehta (MLA) who said that, "The second Technical Committee has recommended the Dagmara barrage but it is painful to note that the Chairman of the CWPC is blocking the move on the prompting of Shri K.L.Rao."[13]

Matters did not stop at elaborating the negative attitude of Dr. K. L. Rao. The differences of the political

parties also came to the fore. Karpoori Thakur, a former Deputy Chief Minister of Bihar, aimed his missiles at the Congress Party saying, "The history of the construction of the Western Kosi Canal is a history of betrayal and cheating by the Congress Party. I am saying this after a lot of thought and choosing my words very carefully."[14] Bilat Paswan (MLA) retorted, saying, "Many honourable members have talked about the Western Kosi Canal and have suggested that there have been lapses on the part of the Congress Party. After its rule the Sanyukta Vidhayak Dal came to power in 1967 and Shri Karpoori Thakur was the Deputy Chief Minister then. But I am pained to say that even he never cared about it."[15]

Dhanik Lal Mandal (MLA) was of the opinion that though Nepal was to get water for irrigating over 20,000ha, they had doubts whether the promises made by the Government of Bihar, whether written or otherwise, would be fulfilled and hence they were delaying according the sanction.[16] Radha Nandan Jha (MLA) cautioned the government that it had conspired to stall the project and the way the population was rising, in the absence of the canal, the people of Darbhanga would start eating each other.[17]

Baidya Nath Mehta (MLA) did not mince words in expressing his frustration, saying, "The government is not bothered about the Dagmara barrage. It is more interested in constructing the embankment, desilting and checking erosion. One was the *Kamdhenu* (heavenly cow) and the other was the *Kalpataru* (heavenly tree). The *Kamdhenu* has the quality that if you go and ask anything from it, she will give it to you. The *Kalpataru*, similarly, gives you anything you ask for by standing beneath the tree. There is a monopoly house out to destroy this project, a monopoly house of power and politics."[18]

People Take To the Streets

Amidst all the debates inside the Vidhan Sabha and outside, processions, sit-in strikes and demonstrations continued in Darbhanga and Madhubani, demanding speedy construction of the WKC. There was a Darbhanga bandh on May 1, 1969 in favour of the demand for the WKC. Interestingly, Yamuna Prasad Mandal, a Congess MP, sought permission from his party in 1968 to initiate a movement to demand the WKC.

Hari Nath Mishra charged the state government that it was not taking the requisite interest in the WKC because it did not have the money to undertake the project. "Is it not true that shortage of funds may be another reason for the delay? Is it true that even if the government had been alert, you could not have built the canal with an allocation of Rs. 50 lakhs while you actually needed Rs. 22cr for the purpose? Can you take up the project with Rs. 50 lakhs?"[19]

Dagmara Barrage Accepted

In all this confusion, Lahtan Choudhary on behalf of the Government of Bihar announced in the Bihar Vidhan Sabha the start of the construction of the Dagmara barrage. Referring to the Western Kosi Canal he said, "We have given all the facilities that the Nepal government has asked for. We have conceded all their demands. Talks have been on since 1963 without yielding any results. We do not know what the problems are with Nepal but the fact is that we are not finding a way out to start the work. Our Government has decided that we will not depend on them anymore."[20]

The proposed barrage at Dagmara was supposed to work after the effective life of the Bhardah barrage was over. The Western Kosi Canal that would begin from the Dagmara barrage would also give India freedom from negotiating with Nepal. The estimated cost of this project was Rs. 22cr. It would be 112km long but its command area would be 40,000ha less than the one starting from Bhardah. Alternative arrangements were likely to be made for that area and installation of tube–wells at an estimated cost of Rs. 6.5cr was thought of as the solution. The new canal had many advantages. It was going to reduce the erosion of the embankments between Dalwa and Kunauli due to reduction of the velocity of flow thereby reducing the annual maintenance cost of the embankments. It was definitely going to improve communications. The Ministry of Surface Transport was planning a road bridge at this point for a long time and the barrage could be linked to this project. That would reduce the overall cost of the project. There was also a proposal to make a rail bridge over the barrage and in that case a part of the costs could be borne by the Ministry of Railways also. Thus, pooling the resources would make the construction easier.

Dagmara Barrage Dropped

In January 1971, the GoB constituted another committee to look into matters relating to the Kosi. It also recommended the construction of the Dagmara barrage. But Dr K.L.Rao was still not convinced of this proposal. Referring to the Chairman of the CWPC, S.K. Jain, he said that the Dagmara barrage was not a cheap solution for irrigating the area and that before any decision was taken on it, its economics had to be ascertained.

In view of the prolonged indecision, Hari Nath Mishra met the then Prime Minister Mrs. Indira Gandhi, on August 3, 1971, along with a delegation, to

urge her to personally look into the project and relieve the people of Darbhanga of the uncertainty. In a memorandum given to Mrs Gandhi, Hari Nath Mishra, quoting from the Report of the Kosi Technical Committee, said, "Only Mr. S.K.Jain, Chairman, CWPC, had called for economic studies which have been done and have found the proposal justified."

6.4 Western Kosi Canal from Bhardah Revived

It is quite likely that the constitution of the Kosi Technical Committee by the GoB and subsequent developments pushing India to go it alone with the construction of the Dagmara barrage may have put some pressure on Nepal. Had India constructed it, Nepal would not get any benefits, while the investments on the Bhardah headwork of the WKC would go waste as far as India was concerned. If everything had gone smoothly, irrigation from the WKC would have started by now. It was difficult to say how much of the differences between the engineers were technical and to what extent they were political. Poona Research Station, where the model tests were conducted, was often accused of presenting a wrong picture of the Kosi embankments, a few years ago. While it had certified that the embankments would meet all the expectations of flood control, they had already breached twice, once in Dalwa (1963) and the second time in 1968 near Jamalpur in Darbhanga district. Many people believed that they were deliberately misled about the feasibility of the Dagmara barrage for various reasons, from time to time, but the most recent reason was that there were signals from Nepal accepting the proposal of the WKC.

The Indian Nation (Patna edition), in its editorial of August 7, 1971 wrote, "The excuse might be taken of the barrage scheme not being technically sound to dupe the people but what is really preventing the Centre from giving a green signal to it is the revived hope of Nepal giving a clearance to the abandoned Western Kosi Canal Scheme. Not long ago a cryptic report appeared in the newspapers that an assurance of such a nature had been given by Kathmandu." This information of the Indian Nation came to be true and an agreement was signed in Kathmandu on October 27, 1971 between the two countries for the original Western Kosi Canal scheme and the Dagmara barrage was dropped.

Nepal, however, insisted that in addition to irrigating 13,800ha through gravity flow, a lift irrigation scheme to irrigate an additional area of 11,700ha in Nepal, by lifting the water up 15m. At the time of signing this agreement the project cost had risen to Rs.37cr.

6.5 Where Is The Money For The Project?

Subsequent to the signing of this agreement, hopes were raised for the initiation of the construction of the WKC in its original form. But the hopes were belied once again when Dr. K. L. Rao announced in the Lok Sabha on November 23, 1971 that the GoB would have to mobilize its own resources for the construction of the Rs. 37cr project. It was impossible for the state government to raise this money. In 1972, the GoI assumed the responsibility to disburse a sum of Rs. 2cr annually for the project but the 35km long Nepal portion of the Canal alone was to cost Rs. 7.5cr. According to the conditions of the agreement between the two countries, the job had to be completed by February 1975 and the central assistance was not sufficient even for this job. Work on the Indian portion was an absurdity to think of under the circumstances.

Work on the project somehow crawled for two years when suddenly the so-called 'innocent and helpless' GoB was docked as the work in Nepal was stopped and a cover- up was done to keep the facts away from the people. Quoting a news agency, the Indian Nation (Patna ed.), in its September 13, 1973 editorial wrote, "The construction work is held up, it is revealed, for the last five months by a dispute over land acquisition in Nepal as a result of which Bihar is losing Rs. 10,000 a day. But the state government seems to have misled people by deliberately withholding this information. During the Union Irrigation Minister Dr. K.L.Rao's visit to Kathmandu, two years earlier, the Nepal government had agreed to release land after February 1972 for the first 22km out of the 35km long canal on payment of compensation at the prevailing market value. Surprisingly enough, when a major part of Rs.23.22 lakhs (Nepal currency) deposited in the bank of the Kosi Project Administration was not disbursed among the landowners, the latter obstructed the construction work in May last on the ground that they did not get compensation....The Bihar Government, however, gave a different picture this year. A brochure published by the River Valley Projects Department this year said that the demarcation work had begun, that land between 27km and 35km had been transferred and canal excavation taken up. Brick lining of the canal for a length of 10km was also proposed to be started this year. Was the Bihar Government really not aware of the actual situation in July?"

6.6 The Fifth Foundation Laying Ceremony

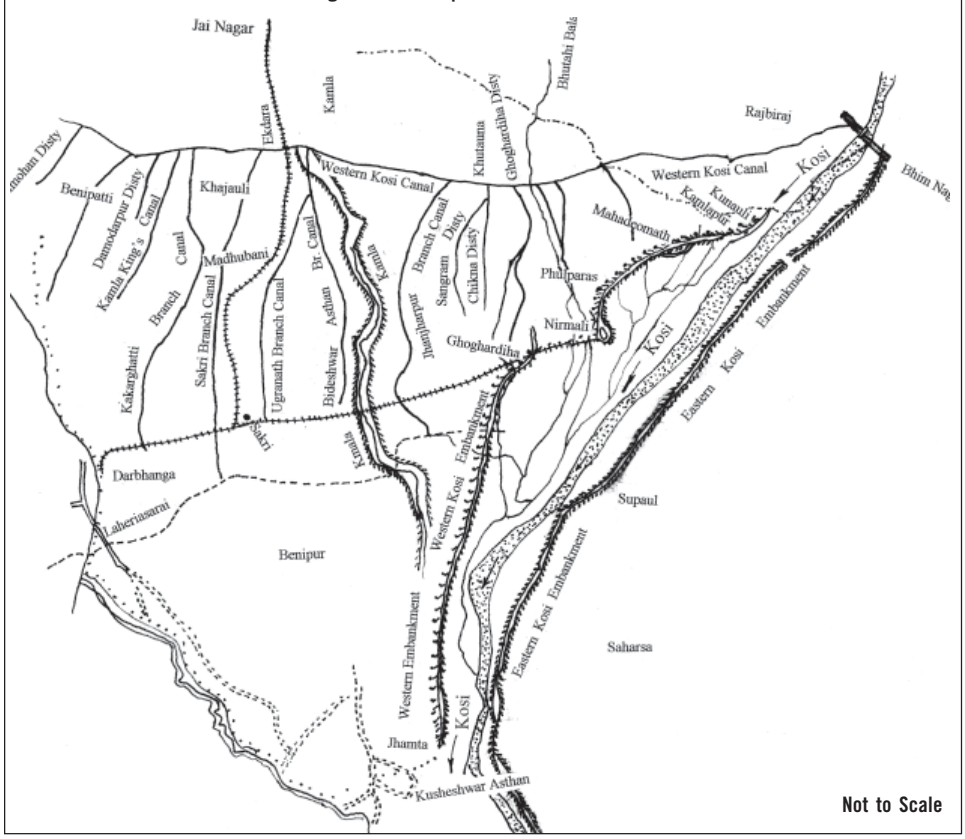
Work somehow started on the Indian portion in 1974 but not before another foundation laying ceremony, the fifth in the series, on the January 30, 1974 this time

by Abdul Ghafoor, then Chief Minister of Bihar. The project has been crawling ever since.

6.7 Main Features of the Canal

The main canal of the WKC (Fig.6.1) has a length of 35.13km in Nepal, from Bhardah headwork to the Indo-Nepal border. It enters the Indian territory at Nari village near Laukahi, in Madhubani district. Within India, its length is 56.90km. It passes through the villages of Laukahi and Piparahi before crossing the Bhutahi Balan near Ekamma, going on to Bhakua via Barel, Bhupatti, Pirhi, Salkhania, and Chhorahi where it crosses the Kamla followed by the Sakri-Jay Nagar rail line near Khajauli and the Madhubani-Darbhanga road near Kaluahi before terminating in the Dhaus River as the Sahar Ghat branch canal. The proposed irrigated area of this canal is enclosed between itself in the north, the western Kosi embankment in the east, the Dhaus and the Darbhanga Bagmati rivers in the west and the Kareh in the south. The discharge carrying capacity of this canal at Bhardah is 240 cumecs, and 184 cumecs at Nari. It was projected to irrigate 14,100ha in Nepal and 258,000ha in India. The irrigated crop area in the Indian portion of the command is 325,000ha.

Fig 6.1 Index Map of Western Kosi Canal



6.8 Rising Cost and Progress at Snail's Speed

Bihar's Irrigation Minister Jagannath Mishra told the Vidhan Sabha on February 20, 1975 that the revised estimated cost of the canal had gone up to Rs. 51cr and it was likely to be completed in all respects in 1980-81.[21] Tej Narayan Jha (MLA) expressed his dismay that the cost of the project had gone up four times from the original estimate of Rs. 13cr. He also expressed concern that if the project was not completed early, its cost could go up five or six times.[22]

This, however, was a cry in the wilderness. There was no correlation between the pace at which promises were made and the actual progress of the work. Work at the sites proceeded at snail pace while promises sprinted. Dhanik Lal Mandal, the Deputy Home Minister in the Morarji Desai cabinet at the center, visited his village located in the command area of the WKC in October 1979. It was then expected that the canal would start irrigating the areas located on the eastern side of the Kamla by 1981. But when Mandal visited the canal, he found that out of 59 structures on the main canal, only 17 were complete and work on seven schemes was in progress. In the remaining 35 even the survey work was not completed. He said that at the speed at which work on the canal was proceeding, it was unlikely that it would be completed within the twentieth century.[23] Nobody realized how prescient this observation was!

The Janta Party government under the leadership of Karpoori Thakur had just fallen in Bihar some two months earlier and Mandal said that he would send a team of central experts to complete the canal. This did not evoke any excitement among the common people because by then they were used to such promises being made. Karpoori Thakur and Jagannath Mishra were both elected from the WKC command area and had served the state in the capacity of Chief Minister for a long time. But despite the presence of such influential people there was little progress as far as the canal was concerned.

Hari Nath Mishra gave another memorandum to the Prime Minister, Mrs Indira Gandhi, on June 11, 1980 citing all the problems faced by the WKC project and requested her to intervene in the matter. This time A.B. Abdul Ghani Khan Choudhary, on behalf of the Prime Minister, assured him that work on the canal would be completed in all respects in the next five years. Mishra wanted the canal's construction to be taken out of the clutches of the state government and handed over to the central government. He suggested CWPC as the body that could do this job. Ghani Khan Choudhary is reported to have told him that the constitution would have to be amended to hand over the work to any central agency as irrigation was a state subject and all the works had to be executed by the state government. By this time, 1979-80, the estimated cost of the WKC had gone up to Rs.154.06cr and the total expenditure incurred on the scheme was only Rs. 17.18cr. The annual expenditure on the project rarely exceeded Rs. 4cr and at this rate the canal would take at least 35 years to be completed if the prices of all the labour and materials remained fixed. Dhanik Lal Mandal must have made such calculations when he said that the construction of the canal would extend to the 21st century!

6.9 The Present Condition of the Western Kosi Canal

Construction work on the WKC that was scheduled to have been completed in 1980 is still in progress. According to project sources, the construction of the Nepal portion of the canal is complete in all respects and the main and branch canals in the Indian portion too are complete (99.5 per cent). Construction of distributaries up to the field block level is 70 per cent done, but only 32 per cent of the field channels were ready till 2008. Construction of structures in the Saharghat and Kakarghatti Branch Canals is lagging far behind schedule.

Unless these structures and water courses are completed water cannot proceed to the fields. It must be remembered that such a state of progress reflects the performance of the past 30 years and it is hoped that things will improve in the future. The slow progress in the case of the village and field channels is a matter of concern to all those waiting to get the canal water. The WKC sources feel that the canal will be complete in all respects by June 2009, but this appears to be doubtful now.

Once the canals are completed, 234,800ha of agricultural land in Bihar and 19,900ha in Nepal will

Western Kosi Canal near Barail Chowk (Madhubani) Enough water for washing clothes and utensils

come under irrigation according to the present estimates. In 2006-07, the WKC irrigated a total of only 25,305ha which is only 7.79 per cent of the target. This should be a matter of concern to every body. It had been proposed to add another 34,770ha to the irrigation potential during 2006-07, but the actual irrigation remained stuck at 25,305ha. In 2007-08 season it irrigated only 23,767 hectares and in the Rabi season it was closed for de-silting.

The estimated cost of the canal when first proposed, in 1962, was Rs. 13.49cr. It was revised and sanctioned for Rs.161.80cr in 1981, Rs. 281.75cr (against an estimate of Rs 326.61cr) in 1988, and Rs. 830.69cr in 1999 (against an estimate of Rs. 904.01cr). The project had spent a sum of Rs. 1008.97cr till March 2008, while the estimated cost has been revised to Rs. 1115cr in 2007. The actual irrigation from the canal till date is given in Table 6.1

It is obvious from the table that the actual irrigation from the WKC rose slowly after it was commissioned in 1986 and it was only in 1992-93 that the canal irrigated 16,980ha putting kharif and rabi together. After that there was a continuous decline in the irrigated area till 2000-01. Thereafter the figures started improving and the canal irrigated 25,305ha in 2006-07, but it is still far from what the canal should have irrigated. This is only 7.79 per cent of what was promised to the people in 1963. It is also amazing that while billions of rupees were spent on the project during 1990-2006, only 5,110ha were added to the area actually irrigated by the project. Utilization of only 25,325ha in 2006-07 against a proposed potential of 167,556ha should be a matter of concern to all connected with the project.

6.10 Problems faced in the Western Kosi Canal

The safety and security of the WKC, because of the natural factors, is the biggest problem of the project. The ground slopes in the area from north to south with a leaning toward the east while the canal runs from east to west and it acts as a bund to the natural flow of water. In its entire reach of about 90km, the canal is crossed by many rivers, flowing from north to south, like the Khando, Hanumana, Tilyuga, Mahuli, Bhutahi Balan, Bihul, Panchi, Dhokra, Kharak, Ghordah, Sugarwe, Balan, Soni, Dhauri, and the Kamla besides innumerable smaller streams. All these rivers bring tremendous amounts of sediments with them and that frequently changes the topography of the land in the northern portion, posing a security threat to the canal. Wherever a stream passes underneath the canal, water stagnates on the northern face of it and causes inundation upstream. If the water pressure is not enough, the canal stands firm before the gushing water. However, if the water pressure is high, it breaches the canal to the detriment of the people living

Silted Western Kosi Canal near Ekamma siphon

Table 6.1
Actual Irrigation from the Western Kosi Canal in '000ha

Year	Kharif	Rabi	Hot Weather	Total	Percent of the Target
1	2	3	4	5	6
1985-86	4.00	-	-	4.00	1.23
1986-87	9.00	2.00	-	11.00	3.38
1987-88	2.00	2.00	-	4.00	1.23
1988-89	12.00	2.35	-	14.35	4.42
1989-90	13.00	3.51	-	16.51	5.08
1990-91	13.50	2.99	-	16.99	5.23
1991-92	13.88	2.29	-	16.17	4.98
1992-93	15.87	1.11	-	16.98	5.22
1993-94	9.87	1.10	-	10.97	3.38
1994-95	12.60	0.88	1.20	14.68	4.52
1995-96	9.70	0.96	2.12	12.78	3.93
1996-97	6.27	0.58	2.27	9.12	2.81
1997-98	9.31	0.14	2.45	11.90	3.66
1998-99	9.30	0.39	2.20	11.89	3.66
1999-2000	5.89	0.36	1.58	7.83	2.41
2000-01	5.84	0.43	0.14	6.41	1.98
2001-02	6.40	-	0.16	6.56	3.02
2002-03	9.44	0.14	-	9.58	2.95
2003-04	13.44	0.18	0.13	13.75	4.23
2004-05	17.39	-	-	17.39	5.35
2005-06	21.37	0.25	-	21.62	6.65
2006-07	24.96	0.345	-	25.31	7.79
2007-08	23.77	Canal closed	-	23.77	7.31

Source: Office of the Chief Engineer, Western Kosi Canal Project, Darbhanga

south of the canal as the breach in the north is often accompanied with a breach on the southern bund of the canal. There is no third option available. With mounting water pressure on the canal, it either breaches on its own or the people living in the northern face of the canal breach it. That is an annual occurrence, on the same pattern as in the Eastern Kosi Main Canal. Stagnation of water north of the canal is accompanied with sedimentation there, which spoils the fields. Other vegetation and most of the trees cannot withstand sand and they die. Such scenes are aplenty all along the canal's length.

In the 1998-99 flood season the western embankment of the Bhutahi Balan had breached in Khurhuria, north of the WKC, and the emerging water then breached the WKC and found an escape in the canal itself. Part of the Bhutahi Balan water rushed toward the west and breached the WKC near Chharra Patti surplus escape. The remaining flow of the Bhutahi Balan rushed to the east and the sand contained in the flow, jammed the canal completely exhausting all possibilities of irrigation west of the Bhutahi Balan siphon. Irrigation from the canal in this area has been suspended ever since. The surplus escape that was badly damaged was repaired without much success at an estimated cost of Rs. 22 lakhs. The contract to clear sand from the remaining portion of the canal runs into crores of rupees. After the so-called success of de-silting of the Eastern Kosi Main Canal in 2004-05, de-silting of the WKC was started in 2007-08. Its outcome is yet to be seen.

A journey from Nari village in Laukahi block of Madhubani district where the canal enters the Indian territory, to Madhawapur where the canal terminates into the Dhaus river as the Saharghat Branch Canal, is very educational. Straying into some nearby villages offers an opportunity to peep into the present and future of the canal. The Bhutahi Balan crosses the WKC near Ekamma village. The villagers here say that as long as the Bhutahi Balan siphon and the bridge over it were not built, the Bhutahi Balan embankments did not pose much of a problem. After the construction of the siphon, bamboo-deep water collects on the northern side of the canal. "If we had known that this was going to happen in the future, we would never have allowed the canal to be built," say the villagers. Some distance west of Ekamma is Jhanjh Patti village. The WKC passes through the middle of this village bisecting it into two parts, without any bridge in between. One can see a cut in the northern bundh of the canal here through which uncontrolled water from the north enters the canal. The WKC is filled with sand here and cannot irrigate at all.

Siya Ram Yadav of Tengrar village reveals, "Some 6 or 7 kilometers south of Ekamma and east of Parsahi, a channel is dug from the canal that passes through the middle of Tengrar. It does not benefit Tengrar at all. Some water might be going to Parsahi. We collected some money among ourselves to deepen the channel but that did not yield any result. Chaturanan Mishra, when he was the Agriculture Minister at the center had brought some money to the state on the condition that it would be spent only on the Western Kosi Canal. It is because of his efforts that the money is being utilized here, otherwise this would have shifted to the Sone canals long back. Some work has started now after a lapse of over 10 years but we have all lost interest in it. It is immaterial for us whether the canal irrigates or it does not. You please go round the entire area and

you will not find a single person who will plan his agriculture based on the availability of water in this canal. The place where the Bhutahi Balan crosses the canal, at 37 R.D., the canal is filled with 7 meters deep sand. How do you expect it to irrigate?"

There is a headwork of the Jhanjharpur Branch Canal near Barail Chowk, at 69.00R.D. Just before this, at 66.52 R D, the Jhanjharpur-Laukaha rail line crosses the canal. The northern face of the canal is broken close to the east of the railway line. Over 100ha of land trapped between the rail line and the WKC remains waterlogged during the rainy season. It is cut every year by the villagers whose land is lost to such waterlogging. The government faithfully plugs the breach every year but not before destroying the crops. People at Barail Chowk say that water comes into the canal but only during the rainy season. Thereafter it remains dry. The accumulated water in the canal suffices for washing clothes and utensils for the rest of the year. They repent that their land was acquired for constructing a canal that does not irrigate. They are also not sure whether it will irrigate at all in the future. Many farmers in the villages around have purchased diesel pumps for irrigation. Those who have not, hire them for Rs. 70 or 75 an hour. One who can afford to pay this price for irrigation, can always hire these pumps or else migrate to places like Delhi or Punjab to look for employment there. Otherwise also a family member will have to stay in Delhi or Punjab to pay for the cost of irrigation back home. The farmers who lost their land for the construction of the canal are bitter anyway.

There is another village called Harri, in Jhanjharpur block of Madhubani district. Apparently it is a prosperous village and the situation is not very bad internally. The Jhanjharpur–Laukaha rail line and a District Board road pass through it. They impede drainage in the locality significantly. During the rainy season, either of the two often gets overtopped or even breached causing immense hardships to the people around. If they do not breach these structures to drain the water out, the area remains waterlogged for a long time. The people here are now concerned about a new addition to their problem and that is the branch of the WKC passing through the village. Who will be responsible for the waterlogging that will now be a permanent feature in the village asks Yogendra Singh the former *mukhia* of the village. "There are no big farmers in the area. If the canal is drawn over this land, it would make the small and the marginal farmers landless. All their land will go in the canal, then what will they irrigate? Waterlogging awaits those whose land would not be lost to the canal. It will ruin the economy of the area," he rues.

South of Harri, a branch canal of the WKC is being dug. It will reach up to Lakshmipur Chowk in Madhepur block of Madhubani district. Farmers of Lakhnaur (East) Panchayat are opposing the extension of this canal because they will lose most of their land due to the canal alignment and the rest will be waterlogged. The canal will run parallel to the Kamla embankments that are known to breach at many locations during the rainy season every year. If there is any breach in the eastern Kamla embankment after the construction of this canal, it will prevent the further downstream flow of the Kamla water resulting in inundation of the area between the canal and the embankment. The people living there will then be constrained to cut the canal to lessen their woes. In case there is a breach in the canal, the Kamla embankment will have to be cut to drain the water out. Farmers living between the canal and the Kamla embankment will face misery for all times to come because the area is waterlogged even without the canal.

Mahabir Prasad Mahato

Mahabir Prasad Mahato of Pachahi village, Madhepur block in Madhubani districts says, "The WKC was torn to pieces by the floods of 1987 and the emerging water overtopping this canal entered the funnel-like space trapped between the Kosi's western embankment and the Kamla's eastern embankment. There is hardly a two kilometer gap between the two embankments here. There was virtual panic as the floodwaters hit village after village. Monsoon crops are generally lost because of floods almost every year now but winter crops remain a distinct possibility. It was around this time that irrigation from the WKC started. There is a surplus escape for this canal near Chharrapatti in the north which remains open during the winter. All the surplus water from the canal entered our area and ruined the winter crop also. Thus, we lost both the kharif and rabi crops. Then we agitated against the behaviour of the canal staff and its malfunctioning but fortunately for us, the government did not have money to invest in the canal and our lives were saved. Work on the canal resumed some 2 or 3 years ago and we were all opposed to this extension. A whisper campaign was started by the authorities that if we hindered the work we might lose the compensation package. We tried all sorts of democratic means to oppose the canal but failed. It has not rained enough in the area in the past two years and the canal water has had a soothing effect on the people but for

all practical purposes, this is a flood-prone and waterlogged area and the day we have normal rains, nobody will come to protect us. This is precisely what is happening in the eastern Kosi canal area."

As one moves west of Barail Chowk the next destination is Pirhi and Salkhania where the Balan crosses the WKC. A siphon being constructed here is now nearing completion. Ram Parikshan Pandey of Pirhi once led a movement against the construction of the Kamla-Balan embankment in the 1950s and the protesters did not allow the eastern embankment of the Kamla to be built in this zone. The hardships faced by people elsewhere after the construction of the Kamla-Balan embankments were avoided in these villages as the flood water had space to spill. The government had conceded the demands of the leaders but always maintained that the gap was left because the Balan, the Dhauri and the Soni Rivers join the Kamla-Balan through this gap and hence space was provided for that purpose. It cannot, however, explain why the engineers did not realize this simple thing earlier and why people had to resort to a movement to correct the situation? A series of siphons on the WKC starts from Pirhi/ Salkhania covering the Balan, Soni, Dhauri, and Kamla rivers. Many people involved with the construction of the canal — engineers, contractors and labourers — have a totally detached view of the WKC. They believe that unless the canal is lined with solid concrete blocks to provide stability, the earth work and the lining of the canal will never come to an end because it will continue to breach for ever and their services will always be needed to do the patch up work. Many contractors have been doing the same job for years now.

The WKC crosses the Kamla River near the Kasma Marar village. The foundation stone of the Kamla siphon was laid in 1992 by Lalu Prasad Yadav (then Chief Minister of the state). He assured the people that the project would not be allowed to suffer for want of funds and that the canal would cross the Kamla River by 1996. The area downstream would get irrigation from the canal thereafter. The siphon that was estimated to cost Rs. 14cr was only completed in 2007 at a cost of Rs.51cr. This has opened the possibility of irrigation in areas west of the Kamla River. The canal bisects the village with settlements on the left bank and their agricultural area on the right. The villagers are demanding a culvert on the canal to access their fields. The work on the canal is stopped here (April 2008) till a settlement is reached.

The Canal Acts as a Bundh

After crossing the Kamla River one comes to Bardepur village, on the Darbhanga-Jay Nagar road. The canal crosses the road at right angle and this leads to tremendous waterlogging in the villages of Ramgarha, Lakshmipur, Kalikapur, Bardepur, Parameshwari Tola, Koria Patti, Bhaiya Patti and Man Mohan trapped between the canal and the road. Quite often the villagers cut the canal to drain the water. Keval Jha of Kalikapur says, "The people sitting in the government - politicians, engineers and the officers, do not want this canal to be completed. If it starts working well, the area will have three crops and prosperity will come. In that situation, the local people will not go out as labour. What will happen to the agriculture in Punjab and Haryana then? Where will the labour come from for Mumbai and Delhi and who will clean their plates? I have done all that I could do from my side, from correspondence to thrashing officials but the work on the canal does not move an inch further. This canal is a 'scam personified'. Let somebody enquire into its affairs."

On the other side of the Kamla siphon, there is a regulator of the canal near Kunhauli village, close to Khajauli, the headquarters of the block with the same name. Two canals, namely the Ugranath branch canal and the Bideshwar Nath Sub-branch Canal, take off from this regulator. The Khajauli-Rajnagar road crosses these canals near Kunhauli. This village gets waterlogged without a drop of water being sent through the canal because of the road and the canal bunds. If one could access a relatively bigger size map of the WKC on which the roads and rail lines are also shown, any person with an average intelligence can predict the points where massive waterlogging is going to take place in future. Once the canal starts conveying water the situation below Rahika in the areas located between the Sakri and the Kakar Ghatti Branch Canals will be similar.

As one travels from Khajauli to Madhubani by road via Karmalli Chowk, one passes by the Sakri Branch Canal on the right. Just after passing the Karmalli Chowk, it comes very close to the road in Bhalni village and takes a turn here. There one can see a hume pipe culvert located below the canal. A cursory look at these pipes would suggest that they will not drain the water that may collect on the other side of the canal. The reality becomes obvious when one stands on the canal. Rainwater from Bhalni, Madhepur and Dostpur villages collects in the arch formed by the turning of the canal without much scope for draining out. Both the crops of these villages are lost because of this accumulation of water even now when the canal does not carry any water in it. What will happen after the canal flows up to its full supply depth is anybody's guess.

Before the WKC terminates in the Dhaus near Saharghat, it crosses Thomane River and bisects Manpaur village. The drainage of all the three

Panchayats of Manpaur used to be through the Thomane and that has been blocked by the WKC. Residents flee the village during the rainy season as the backwaters of the Thomane inundate the village to a depth of about five metres. "The situation improves only after the canal breaches or is cut by irate villagers," says Braj Kishore Jha, a resident of Manpaur.

6.11 An Environmental Impact Study of WKC

The Western Kosi Canal project (Darbhanga) conducted a study of its environmental impact in 2000. The report talks about the irrigation possible from the canal, the prosperity it will generate, predictions about no undesirable effects on the ground water table, freedom from floods in many areas because of the digging of the canals, afforestation (cost Rs. 56.44cr), claims of completing the canal by 2002 and many other gains.

The claims and promises made in this report are good enough to influence any person who is thoroughly ignorant of the area and the working of the WKC project. At one place this report states, "Due to excessive use of irrigation water in the command, the problem of mosquito has been aggravated for which effective measures from the government are required otherwise malaria and filaria may crop up again in a big way in the entire command area."[24] Will the authorities of the WKC say where they are irrigating so much that malaria and filaria have erupted and that the situation has become so bad that government intervention has become necessary? If something has happened somewhere, it is because of the waterlogging caused by the faulty, unscientific and incomplete alignment of the canal and not by the excessive use of canal water by the farmers. How can the farmers give an overdose of water when the canal is hardly irrigating?

The study report on environmental management is silent about the drying of all the shisham trees planted along the canal earlier, but does mention about a budget of Rs. 56.44cr for fresh plantations. There is no mention in it of the exhausted capacity of the canal due to sand filling, nor is there any regret for the delays of thirty years in completing the project. The WKC authorities are also not concerned about the fact that the estimated cost of the project has gone up by 83 times and after spending 75 times more than the original estimate, the maximum that the canal irrigated was only 7.79 per cent of the target in 2006-07. And in 1975 Tej Narayan Jha was worried that the cost of the canal might be 5 to 6 times more than the original estimated cost!

This report also contains as an attachment, a report prepared by the Central Ground Water Board that was possibly written in 2000. It mentions that, "The western Kosi canal system will have an adverse effect on the ground water system in the area. It has been worked out that after complete implementation of the project, even if the canals run at 50 % capacity, there will be considerable rise in the water level leading to waterlogging in many parts of the command area in future."[25] This prediction has been made by an institution of the Government of India and not by any irresponsible individual or an NGO. The report has recommended proper use of ground water in the area.

6.12 The Future of Irrigation in the Western Kosi Canal Command

We have seen that the safety of the canal is a problem in itself. After the Bhutahi Balan had breached its embankment in 1987, the canal was not used for a long time then. By the time the damages could be corrected the same river again rendered the canal defunct in 1998. This has not been corrected till now and there is virtually no irrigation from the canal beyond Bhutahi siphon. In future, whenever the canal breaches or is cut by the people, irrigation will again be suspended. There is no readymade solution to this problem.

Secondly, there is every reason to believe that the WKC will function like the EKMC. The latter was designed to irrigate 712,000ha. A committee appointed by the GoB concluded in 1975 that it could not irrigate more than 374,000ha and that the initial projection of the irrigated area was wrong. The actual irrigation from this canal never came near this figure and the maximum irrigation was achieved in 1983-84 when the canal irrigated 213,000ha. In the past four years 2004-05, 2005-06, 2006-07 and 2007-08, it has irrigated only 92,000ha, 150,000ha, 124,000ha and 136,000ha respectively according to project sources. Against such irrigation figures, the waterlogged area in the command of EKMC is 182,000ha. There is a marked similarity in the topography, source, ground slopes, alignment, planning of the canal, the personnel that man the project, from the Chief Engineer to the overseer and from Circle Inspectors to the Amins, the attitude of the farmers and the people and their work culture, the cropping pattern, etc. of the WKC and the EKMC. Therefore the waterlogged area in the command of the WKC will also be more than the irrigated area. It will not be surprising to receive bills before irrigation is actually provided to the fields. If the farmers of Mirzapur, Bishunpur or Thuththi, in Araria district, cut the eastern canal to drain the water out, why will the farmers of Jhanjh Patti, Bardepur, Salkhania, Kasma Marar or Manpaur not do the same? If the EKMC is filled with sand up to its full supply depth despite the silt ejector (this sand was dug out from the canal in 2005) installed in the canal, why will the same

thing not happen in the case of the WKC where a silt ejector is already buried under the canal near Bhardah? After so much effort, the EKMC was irrigating only 16 –18 per cent of its stated target. Why on earth, will the WKC irrigate more?

As of today, the WKC is a source of livelihood for some selected people, including engineers, contractors, brick kiln owners, suppliers of building materials and through them, may be, some small and big politicians. The present and future of all these actors, who are reportedly working in the interest of the farmers, is secure. For the farmers, there are only promises.

6.13 Time Required to Complete the Western Kosi Canal

If the statements of the engineers and the politicians are to be believed, this project should have been completed in 1980, some 28 years ago but it crawls for two years after every assurance. According to project sources, Rs. 1009cr had been spent till March 2008 against a revised estimated cost of Rs. 1115cr (2007) implying that Rs. 106cr more were still needed to complete the project.

The government, however, is hell bent on giving false hopes and no one questions the basis for such assurances. Written statements are issued that the canal will be completed in June 2009. It seems, the farmers have lost interest in the canal and they no more come out on the streets or demonstrate for speedy implementation of the project. With 32 per cent of the distribution system up to the minors and 70 per cent of the water courses still incomplete, one wonders how the canal will be fully operational in June 2009. Besides, there are six railway bridges still to be constructed over the canals.

The Chief Engineer of the WKC told press reporters on January 16, 2008 at Madhubani that irrigation from the WKC would soon start in full swing. With only 32 per cent of water courses complete how this would be possible is anybody's guess. Also, if the warning issued by the Central Ground Water Board that even if the canal runs to half its capacity, the ground water levels in the command area of the WKC would be affected adversely is true; this is the time to plan for clearance of waterlogging that is going to hit the command area under WKC.

Further, it is not known when the government will stop giving funds to the project. Monies given to the project during 1991-95 should concern every body interested in the implementation of the scheme. (See Table 6.2)

Such data should be a matter of shame to any department. In 1994-95 while the actual expenditure on works was Rs. 10.47 lakhs, the establishment cost was Rs.9.38cr. Such issues are not raised anywhere and even if they are raised the concerned people say defiantly 'so what'.

Table 6.2
Expenses on the Western Kosi Canal Project During 1991-95

Year	Works Expenditure Rs. in lakhs	Establishment Expenditure Rs.in lakhs	Total Rs. in lakhs
1990-91	762.93	773.47	1536.40
1991-92	110.19	761.23	781.42
1992-93	95.29	833.10	928.39
1993-94	36.29	885.68	921.97
1994-95	10.47	938.34	948.81

Source: Report of the Comptroller General of Accounts, Government of India, Bihar 1995.

A report of the Estimates Committee of the Bihar Vidhan Sabha (1988) touched upon this point, saying, "Therefore, the Committee would like to know why a scheme that was started 16 years ago has not yet been handed over to the people in the public interest, while 16 precious years have been lost and expenses incurred on establishment, maintenance cost of the entire canal, expenses on the vehicles, expenses on the travel and allowances of the officers and other workers of the project." The report continues, "An area of 202,000ha is likely to be irrigated by the canal in Madhubani district while a potential of only 5,060 hectares has been created till the Bhutahi Balan at R.D. 37.75. The committee feels that after spending so much of money, the created irrigation potential is so small that it is of no consequence. Non-availability of funds for the construction of structures and adhering to no schedule for completion is really unfortunate."[26]

Twenty years have passed since this report and the way things are moving in the WKC project, it may take another sixteen years as well, for the waters to reach most of the tail end of branch canals, minors and the distributaries.

The Western Kosi Canal project can best be summed up the way Saryu Mishra, MLA once did in the Bihar Vidhan Sabha. This was in 1980 the year when the WKC was supposed to have been completed, but the debate was on the problems faced in the EKMC. He had then said, "Hundreds of thousand acres of land are getting ruined today. Farmers are irrigating their lands from drains. This is sheer madness. The other madness is that when the eastern main canal is there, why is the western canal being dug? I want to know why the legislators of Darbhanga, and the people there, want to ruin their land."[27]

6.14 Conclusion

The debate around the completion of the Western Kosi canal and expectations about irrigation from the canal is virtually dead. People do not come out on the roads demanding its completion and the canal rarely finds mention in the assembly or parliamentary debates. Yet its construction goes on and on. Unless funding of the canal improves, some concern is shown toward improving irrigation and simultaneous work is taken on the drainage front, there is little to expect from this canal.

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7

All In the Name of Public Cooperation

Many ambitious projects for irrigation and flood control were begun immediately after India's independence. One of the biggest river valley projects involving the common people, where earthwork was a major component of construction, was the Kosi Project. Some 251km length of embankments and 320km length of main and branch canals, together with sub-branch canals, minors and distributaries that ran into thousands of kilometers were constructed in the project. Inspired by the leaders of the freedom struggle, many citizens of India had an image of a beautiful, prosperous and powerful country and were eager to play their role in developing it.

Success stories of people's participation in the developmental programmes of China were also in the air and our people wanted to better them. The Government of India (GoI) conceived of an organization, which would act as a link between the government and the common person, through which his/her participation could be ensured in governmental programmes. It was expected that the organization would help arouse the peoples' interest in these plans and enthuse them to own these plans. Thus the Bharat Sevak Samaj (BSS) came into being in 1952.

7.1 BSS – Its Aims and Role in the Development Process

Jawahar Lal Nehru was quite instrumental in mobilizing the common people for development. He said, "We can, to some extent, measure our resources, or most of them. But it is very difficult to measure the biggest of these resources that we have, that is man power, and that philosophy that makes people work for great ends. …. Therefore, we have to look to our people, go to them, talk and discuss with them and work with them. …. So we should go to them not with the pride of knowledge but in humility of spirit and with an intense desire to bring about, with our common labour, that joint effort which can shake and break up a mountain of inertia."[1]

Gulzari Lal Nanda, then Planning Minister at the Centre, also supported the idea of establishing an organization which would run programmes of community welfare for the masses based on voluntary efforts while also getting governmental support and patronage. This voluntary organization would make efforts to tap potential resources and expertise, which hitherto, had never been utilized for the economic development of the masses. It would help create a favourable environment for campaigns against social evils and would act as a liaison between the people and the official machinery. Its aims and objectives would include bringing an element of honesty and commitment in the fields of administration, trade and public life by mobilizing public opinion against corruption in social life, enlightening people about their rights and duties and creating an atmosphere of mutual trust and cooperation.

Bharat Sevak Samaj was established in 1952 to achieve these objectives with the efforts of national leaders, leading social workers and concerned citizens. A national committee was constituted comprising of Jawahar Lal Nehru, Gulzari Lal Nanda, Maulana Abul Kalam Azad, Ghanshyam Das Birla, Satish Chandra Dasgupta, Khandubhai Desai, Father D'Souza, C D Deshmukh, Kailash Nath Katju, Acharya Kripalani, Hare Krushna Mahtab, Shyama Prasad Mukherji, V T Krishnamachari, G V Mavalankar, Ashok Mehta, Jay Prakash Narayan, G L Mehta, P A Narielwala, N G Ranga, Gyani Gurmukh Singh Musafir, R K Patil, Lala Shri Ram, A John Mathai, Rajkumari Amrit Kaur, Durga Bai Deshmukh and Rameshwari Nehru among others. A national plan was drafted according to which BSS would work for (a) building houses, roads, dams and any other construction work of public interest, (b) development of cooperatives and Panchayats, (c) development of village and cottage industries, (d) promoting savings and reducing wastages, (e) development of livestock and (f) to link the government and the people.

Working against adulteration and corruption was an important part of the social health programme of BSS. In addition, BSS was expected to make people aware about civil rights, health, education programmes, mother and child health, improving slums and cleaning

roads. It was mandated to organize games for children and entertainment for the community. Education and social research was also made a part of the programme to understand social problems better and find solutions for the same.

7.2 BSS and the Kosi Project

A lot of possibilities of direct involvement of labour were seen in river valley projects. It was proposed to hand over such jobs to panchayats and cooperatives for execution, thereby totally eliminating contractors. Two veteran engineers of India, Kanwar Sain and Dr. K.L.Rao (then Chairman and Director, respectively, of the Central Water and Power Commission-CWPC) were sent by the GoI to China in May-September 1954 to study the performance of the flood protection works there and give their recommendations for the Kosi Project. Having studied the effective similarity of the Yellow River of China and the Kosi, they had a lot of praise for the way human energy was employed by the Chinese in their river valley projects, which in many cases completely replaced machines. They commented, "River valley projects in China have shown that human energy is colossal and, if properly handled and employed, it can achieve miracles…If the cooperation of the people in the Kosi area is forthcoming, as on the Chinese projects, the Kosi Project can be speeded up and benefits of flood control reaped even earlier than estimated."[2]

During their visit to China, Kanwar Sain and Dr. K.L.Rao had observed that the main 197km long North Kiang Su canal, with a total earthwork of 70.17 million cubic meters, was completed within 80 days by human labour alone. No machinery of any kind was used and the entire earthwork, including cutting, transporting and compacting was done with the help of 130,000 labourers.[3] The progress observed at Mettur, Hirakud, Bhakra, Nangal, Durgapur barrage and Mayurakshi dams was insignificant compared to what the experts had seen in China. They believed that if payments to the labour were made regularly and they were given some facilities at the work sites, they would put in their best efforts voluntarily and with zeal.

Their recommendations led to a competition of sorts in India to better the records of the Chinese. Gulzari Lal Nanda said that if 230,000 persons worked regularly on the Kosi Project, it could be completed in eight months. The only problem was that the land in the Kosi area remained moist and water surfaced after digging a small depth. Also, floods and subsequent waterlogging further curtailed the working period, but the work could be completed if the number of labourers could be increased to five or six lakhs, felt Nanda. "If China can set an example of 80 days, why cannot the neighbouring India bring this further down?" said Dr. Lakshman Jha.[4] For BSS the Kosi Project thus became a testing ground for public cooperation and the Kosi Control Board, in its meeting on December 2, 1954 formally decided that the work of public cooperation would be allotted to BSS.

BSS took up many such works all over the country but it set an example by taking up the Kosi Project assignment, as it was a tough place to work in. Contractors were not very keen to work in this area because of its inaccessibility and unhealthy climate. Even if they came forward, they demanded a high price for their involvement and most of them quickly abandoned the job and fled. Gulzari Lal Nanda told Lok Sabha members in a parliamentary debate, "But the people came forward. There were doubts whether there would be any labour available there to do the work. But the people of that area flocked in large numbers and gave us assurance of their help. People in large numbers in the rural areas and peasants, not accustomed to this kind of labour, came forward. Others also came from all parts of Bihar at their own expense, to offer *Shramdaan*. That was the spirit of the people."[5] Contractors had a feeling that the government would be compelled to follow their diktats. Further, BSS was not in a position to take up the entire work and there was always some left over for the others to share. Not only did the contractors come forward to work, they had to work at lower rates as the rates quoted by BSS were quite low.[6]

7.3 The Approach

For enlisting public cooperation, BSS tried a three-pronged approach.

7.3.1 Pure *Shramdaan*

A certain reach of the embankment was allotted to the *shramdaanis* where school children, teachers, common public belonging to the Gram Panchayats, young men and women, ladies and intellectuals of the area were invited to offer *shramdaan*. On the western alignment of the Kosi, about a kilometer length of the embankment was fixed for such work in Bhutaha village, near Nirmali. On the eastern alignment, one-and-a-half kilometers were earmarked for the purpose in Bairia village near Supaul. In this great endeavour of nation-building, people from all over the country and abroad offered *shramdaan*. Ladies from aristocratic families, too, dug earth and placed it on the Kosi embankments. Mithila Brahmins performed *yagna* and after chanting the *Durga Sapta Shati* gave free labour on the Kosi embankments from *Janaki Navami* in 1955. BSS not only enlisted public cooperation in India, it enthused some groups in Nepal also for voluntary work and two

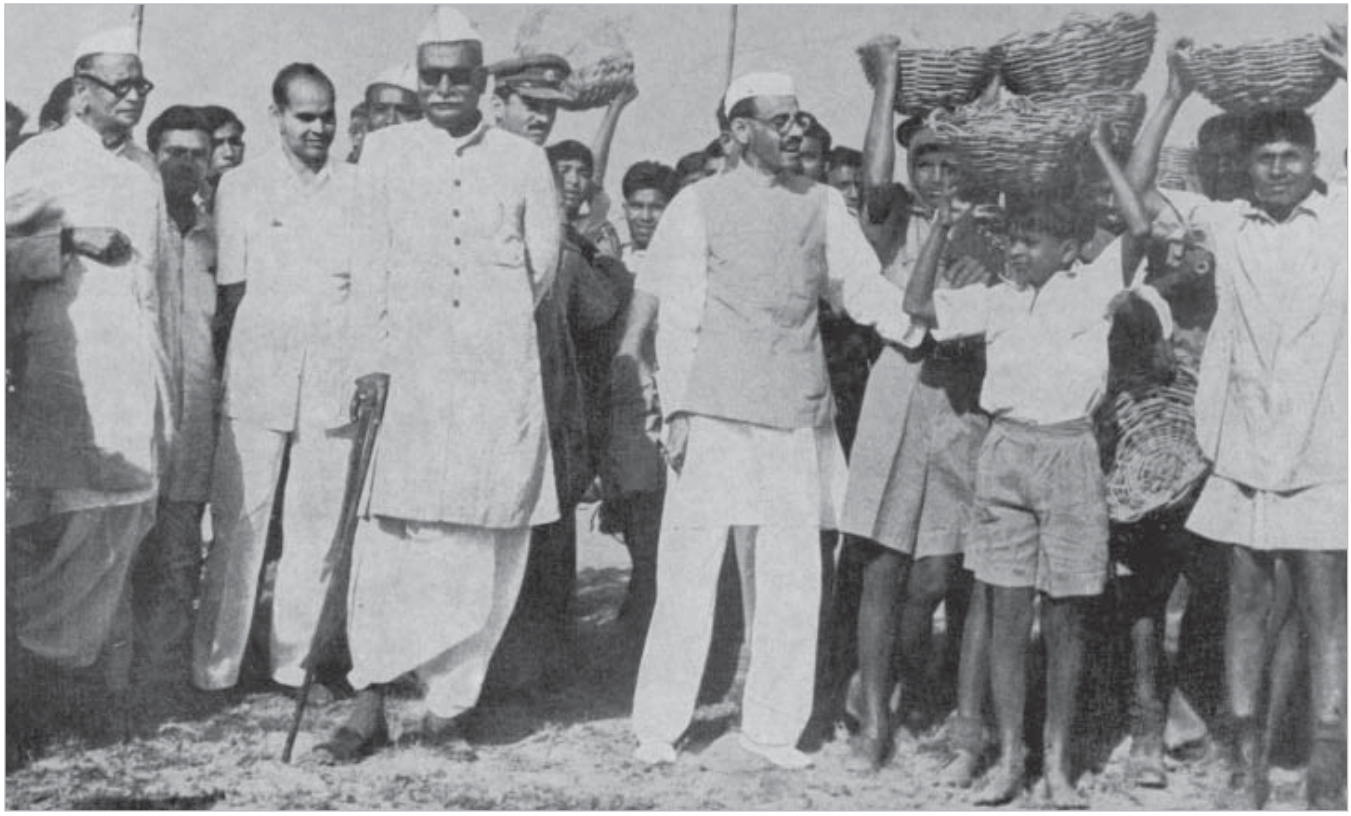
organizations of ex-servicemen there offered *shramdaan* near Hanuman Nagar in Nepal. It also influenced the State Jail Department and put 300 convicted and undertrial prisoners from Forbesganj and Purnea on the canal work. School children, cadets of Auxiliary Cadet Corps and National Cadet Corps and volunteers from abroad also extended a helping hand in *shramdaan.* Service Civil International (France), that had worked with Dr. Rajendra Prasad on relief operations after the 1934 earthquake Bihar, trained volunteers in the Kosi Project works. They came to India at the invitation of Dr. Prasad, then President of India.

The enthusiasm of all and sundry was at its peak when construction started on the Kosi Project. There was a procession of volunteers from all over the country who used to come to the project site on their own, stay and work there for some days according to their capacities and go back. The government arranged for their food and accommodation, but they were not entitled to any payment. At one stage, the number of student volunteers had swollen so much that the Kosi Project had to issue advertisements in newspapers that it had accommodation for only 10,000 volunteers and that the volunteers should not come to the project without prior permission and proper innocculation.[7]

It is true that the expenses incurred on this purely voluntary work in the Kosi Project did not match the output, probably, because those who worked under this programme were not professional earth cutters. BSS had to face criticism for this work. But it was a fact that the *shramdaanis* worked with tremendous zeal, self confidence and a sense of satisfaction of contributing to a national cause. The sense of ownership of governmental schemes that was generated as a result of working at the project site cannot be valued in terms of money. "Investment worth crores of rupees cannot compare with the enlightenment that was generated," wrote Lahtan Chaudhary, a minister in the state government, in his memoirs.[8]

7.3.2 Works done under Gram Panchayats and Labour Cooperatives

Another form of enlisting public cooperation was the award of contracts to Gram Panchayats and Labour Cooperatives. The role of BSS was to contact such groups, encourage them to enlist for working on the project and keep a vigilant eye on the work, once a contract was awarded. The problem again was that such organizations were not experienced in earth-cutting and were ignorant of contracting formalities. Nor did they know how to fill a tender form or how to set the rates for earth-cutting. Then, it was decided to do a test run of earth-cutting and placing it over an embankment and fix the wage rates accordingly. For convenience it was decided that all the payments



Anugrah Narayan Singh, Dr. Rajendra Prasad and Gulzari Lal Nanda with Volunteers on the Eastern Kosi Embankment - March 1955

would be made to BSS, which in turn would make the payments to the organizations and labourers. It was also agreed that of the payments made to BSS 90 per cent would be paid as wages to the labourers, 5 per cent would be used for meeting social obligations in labour colonies like building schools, dwellings, roads and arranging for drinking water, etc. and the remaining 5 per cent to be used by BSS for running its establishment. To solve the problem of input capital, it was resolved that BSS be given some advance and the same could be recovered from their running bills.

The Kosi Project also provided elaborate facilities for labourers by installing 28 dwelling units, 10 tube wells and 10 bore hole latrines every kilometer, as well as lighting arrangements and medical facilities along both the embankments. Entertainment clubs for the labourers were provided every two kilometers where a reading room and games facilities were available along with arrangements for screening films from time to time.[9]

7.3.3 Jobs Done by Unit Leaders Selected by BSS

Unit leaders or *mukhias* selected by BSS were allotted 1000ft lengths of the embankments, for construction. It was expected that 160 labourers working for 100 days would complete this job. An agreement was signed with these unit leaders based on a labour contract but no security deposit was taken from them. On the contrary, they were given advances to enable them to make the first payment to the labourers. There was a provision to deduct the advance amount from the subsequent payments made to them. The advance was fixed at the rate of Rs.10/- per labourer. Measurement and payment of works was weekly which was changed to fortnightly after the first year and the advance amount was increased in the same proportion.[10]

BSS constituted a 12-member Project Execution Committee headed by a coordinator for the works related to the Kosi Project. Representatives from the State Panchayat Board, District Panchayat Board, BSS and a technical advisor became members of this committee. This was a policy and coordination unit whose basic function was to make budgets and work schedules in consultation with the Kosi authorities. The responsibility of the project was vested in a secretary who was assisted on the eastern embankment by Lahtan Chaudhary and on the western embankment by Lalit Narayan Mishra. The work on the embankment was split in reaches of 3 to 5km and each such block was put under a point-in-charge.

Most of the work was allotted to these Panchayats and BSS also set up its own units. In February 1956, when the total work force at the Kosi Project was about 20,000, around half the labour belonged to BSS. In a mid-term evaluation of the work on the Kosi Project, satisfaction was expressed over the performance of BSS since its involvement had helped create self-confidence, cooperation and a spirit of self-help in the minds of the people. Besides, it had ensured people's participation in the project implementation, organization at the people's level and social welfare at the field level.

7.4 Vested Interests Raise their Heads

BSS not only helped organize people, it also cut the contractors to size. It was not working for profit and hence its rates were low. The contractors were professionals and though they did not find it profitable to work at low rates, they were compelled to bring down their rates, almost to the level of the BSS rates. This was, obviously, a victory for public cooperation over contractors.

Contracting is an established arrangement in building construction where the roles of all the actors, including engineers and bureaucrats, though unwritten are very clearly defined. The interests of the engineers and the bureaucrats are tagged to those of the contractors. If the contractor is in trouble, its shadow is cast on the remaining two and they all try hard to eradicate the causes that lead to such inconveniences. BSS surely won the first round with the contractors but it was not ready for their retaliation. Its selflessness was of no use to the 'establishment'. "The contractors, in addition to making 20-30 per cent of profit, have to part with some percentage to the engineers but the engineers dare not discuss about their cuts to BSS. As a result, friction prevailed between the contractors and BSS and their attitude towards it was always bitter," recalled Lahtan Chaudhary later.[11]

It also irked the project's engineers and bureaucrats that common persons had started showing guts in talking to them on equal terms while a contractor, however big he might be, always addressed them by adding the prefix 'Huzoor'. Officials of the Kosi Project were still not free from the hangover of the colonial past, when officers had enjoyed unique privileges under the British regime and probably due to it a rapport between them and the workers was not established.

The widespread people's representation in public cooperation also kept a close watch on them, which threatened their interests vis-à-vis the contractors. This led to a situation where the officials connived to obstruct works taken up under public cooperation schemes. They promoted contractors who first reduced the rates tendered by them and forced BSS to reduce its. The contractors reduced their rates to such an extent that it became difficult for BSS to continue with

the work. The contractors managed to introduce the tendering system in the contracts and cornered most of the jobs with the help of the engineers.

The engineer-contractor combine was working so efficiently that the contractors were making profits even at reduced rates while BSS found it difficult to save its reputation. The engineers went a step ahead. They started delaying the weekly measurement of the works done by BSS. Earlier these measurements were done on a weekly basis and the bills were promptly settled so that BSS was never short of funds to make payments to its labourers. The engineers started making measurements after two to three months and created a situation in which BSS had to surrender. After the competition was withdrawn, the contractors started increasing their rates. The rise was from 60 to 100 per cent. As a cover up to their game, the engineers kept on inviting BSS for negotiations. The traditional cooperation between the contractors and engineers won the race but BSS, somehow, managed to remain in the reckoning.[12]

7.5 The Other Side of the Coin

The initial involvement of BSS in the Kosi Project reveals a rosy picture of its work but subsequent events paint a different one. To complete the story, let us look at them.

The government was determined to complete the Kosi embankments through public cooperation, at all costs. A major problem was that the people on whose land these embankments were going to be built and also those who were likely to be trapped within the embankments were opposed to their construction. They were hindering the progress of the work. The Kosi area was an invincible fort of the socialists and they wanted that the issues of rehabilitation and compensation to the embankment victims be settled first and only then should the structures be built. This practical and natural issue had created an army of people who were opposed to the embankments. To tackle the situation, the government offered contracts for building the embankments to the *mukhias* of the affected Panchayats and other influential persons of the area. Such people became the unit leaders of BSS and aspired to make money out of the project. Thus, the potential opponents of the project were purchased and they became its advocates. This was an achievement of the government through BSS. (See Box: Winning Over Opponents)

7.6. The Beginning of the End

The government had initially — in 1947 — proposed a dam on the Kosi at Barahkshetra in Nepal, calling the embanking of the rivers an outdated technology. It resorted to embankments in a scheme finalized in 1953 amidst controversy. While the personal ambitions of engineers and local politicians were involved in the beginning, money did not have much role to play. Its role started on January 14, 1955 the day the foundation stone of the project was laid. BSS was a pampered child of the government but it became a prey of the establishment. Fighting the establishment was not its cup of tea. Also, apart from the revered leaders and the social workers who had set the goals of BSS, the rest of its workers were merely paid employees or petty contractors in the project and their commitment to the

Winning Over Opponents

"Look, the embankments were being opposed everywhere because in the speech that C.H.Bhabha, then Planning Minister at the Centre, had made at Nirmali in 1947, he had talked about a dam at Barahkshetra and the availability of electricity and irrigation to all. Now none of this was being done here. The 1947 slogans were, 'Kosi Mein Baandh Do' (dam the Kosi), 'Ghar Ghar Mein Bijli Do' (electrify all the houses), and 'Gaon Gaon Mein Nahar Do' (provide every village with canals), but nothing of the sort was happening here in 1955. It was difficult for us to understand what was going on. Those who were likely to be trapped within the embankments apprehended trouble in the days to come. Such thinking led to the construction of ring bunds around Nirmali and Mahadeomath villages.

The "*mukhia*" of every village was made a unit leader of Bharat Sevak Samaj. Now he was the government contractor and started advocating embankments against the wishes of his own people. Thus advocates were created at the village level and the problems of the government were solved. Along with executing the contract, the *mukhias* kept telling the people that it was not easy to fight the government. People should accept whatever compensation or rehabilitation the government provides, otherwise it may withdraw even that. Unleashing the police may follow and there will be unnecessary harassment, etc."

— Narrated by Lakshmi Singh (79) of Kunauli village, Supaul district

cause was limited to the extent of monetary benefits that they were going to derive from the project.

After the initial enthusiasm for the concept of public cooperation subsided, BSS had to deal with the tricks of the trade that were associated with engineering works, especially earthwork. Within six months of starting the public cooperation work, its joint convener, L N Mishra, resigned in disgust from his post on July 21, 1955. The reasons stated were, (a) Massive and sustained malicious propaganda by political parties against the work; (b) Trouble created by contractors at the slightest pretext; (c) Lack of encouragement by the Kosi administration, especially the subordinate staff like the overseers, etc.

Despite his resignation, Mishra did not sever his links with BSS but later when he became busy with his election bid to join the Lok Sabha in 1957 he could not devote much time to BSS and the Kosi Project. Later, the concept of public cooperation became secondary and political rivalry became the decisive factor. The opposition parties were involved in this game because it was their democratic duty and rivals in the ruling Congress party did not want Mishra's stature to grow.

7.7 Undue Government Patronage to BSS

A sum of ten per cent of the total payments made to BSS was being deposited in its coffers for development works and establishment costs. This money was attracting many persons to BSS. On the other hand, reports of total anarchy in the payments made to the unit leaders, for works on small reaches of the embankment, started surfacing in audit reports from 1958. It was revealed in 1962, that some 109 unit leaders did not come for work after taking advances from the Kosi Project and another 389 unit leaders had balances due from them after settlement of the final bills, resulting in swollen advances. Strict action was recommended against them and the matter leaked out.[13]

Recovery proceedings were proposed against those unit leaders who had absconded after taking advances from the project and against those from whom balances were due. The matter was raised in the Bihar Vidhan Sabha and many Public Accounts Committees (PACs) were constituted to probe the matter in detail. One such PAC (No. 10) wrote in its report that the first meeting of its Sub-Committee with the River Valley Project Department was held on November 23, 1970 when the latter revealed many things in detail to the Sub-Committee.

The Sub-Committee was shocked to learn that the department had no information about the addresses of the unit leaders. It wanted to know why advance amounts were paid to the unit leaders without noting their addresses and without proper identification. The department could not give any satisfactory explanation. In this connection a reference was made to an order from Jawahar Lal Nehru, the Prime Minister of India, wherein he is reported to have said that advances could be paid without any security deposits. In his evidence before the Sub-Committee, the Chief Engineer (Kosi) said, on November 23, 1970 that there was an order from the Prime Minister that advances could be paid without charging any security amount. The Sub-Committee wanted to know whether the order also meant that advances be paid without checking the parentage, address, post office and the *thana* of the unit leaders? But there was no reply from the authorities.[14]

The Sub-Committee wanted to know that when specific orders were given by the department that only *mukhias* of Gram Panchayats or office bearers of cooperatives could be made unit leaders, why agreements were signed with those whose whereabouts were not known. There was no reply. It also noted that among the unit leaders nominated by BSS, were persons who took advances, sometimes even thrice, and yet refused to work and in some instances payments were drawn by two persons for the same job.

In the case of many unit leaders the bills could not be finalized because there had been a difference of opinion, on the mode of measurement, between BSS and the Kosi Project. Whether the payment should be based on the pit or the section measurements, remained undecided for many years. Although the work on the embankments was almost complete in 1957, the decision on this was taken only in 1965 as revealed in a letter of the River Valley Project Department (Kosi) No: VRCK 125-64-5025, dated September 29, 1965 which says, "Payment may be made as per section measurement but in these particular cases where pit measurement are more than the section measurements, variation upto 20 per cent may be allowed." The PAC objected, asking; (i) Why basic changes were made in the mode of measurements and (ii) Why were decisions taken in 1965 about works done in 1957 and even these were not implemented.

All this indicates that many administrative decisions were taken arbitrarily and there were no supporting documents for such decisions. The much talked about order of Nehru about which the Chief Engineer of the Kosi Project had told the Sub-Committee was never traced and the deputy secretary of the River Valley Project later told the Sub-Committee that no such order ever existed.[15] He, however, showed a letter from the Central Ministry of Irrigation and Power that contained the guidelines for works with public cooperation. Now the question arose that if there was no such order and it was not possible to recover the money, who should be held responsible? It was obvious that the accusing

fingers pointed towards BSS because it had introduced unit leaders in the Kosi Project. The Sub-Committee raised this point with the Chief Administrator of the Kosi Project and he was of the opinion that BSS could only have a moral responsibility but not the legal responsibility because, legally, the matter was restricted to the Project authorities and the unit leaders.

That was not all. When the Sub-Committee asked the Chief Administrator for a copy of the agreement between the unit leaders and the Kosi Project, he said that there were verbal instructions from the Minister of the River Valley Project not to give these documents to it. The latter felt that the behaviour of the Chief Administrator was an infringement over its jurisdiction and he was trying to obstruct its functioning. It asked the Chief Administrator to give confirmatory evidence of the verbal instructions of the minister. In response the Chief Administrator showed an order given by the minister wherein it was written, "The matter was referred to the speaker of the Vidhan Sabha and he has been apprised of the entire situation. Having gone through all the documents, he, too, was of the opinion that the committee was enlarging its jurisdiction. He said that he will go through the report of the Sub-Committee when it sends it to him and will give his considered opinion and appropriate decision."[16] When the Speaker of the Vidhan Sabha was contacted in this regard, he said in a letter dated January 9, 1971 that, "As far as the said Sub-Committee is concerned, there has been no discussion with me nor have I given any comments."[17] The matter was later referred to the Privileges Committee.

The physical works had been completed around 1962-63. A controversy arose, regarding the method of measurement of the works done, in 1965, at the time of making the payments. In 1971, the PAC also commented that the measurement principle was changed at many locations. According to its report of December 22, 1971, "It is even more shocking that in December 1970, a different principle was adopted for the measurements. The Department could not justify the change in the mode of measurements to the committee. The Sub-Committee was shocked to know that the measurement of the same was taken three years after the execution of the work. To get the correct measurements three years after earthwork is totally impossible. The measurements can only be the 'so called' measurements and correct evaluation of the same by changing the mode of the measurements after a lapse of nine years is impossible. By greatly delaying the finalization of accounts, whether it was intended to benefit the unit leaders or not will only be known after investigations by a high level inquiry committee."[18]

The Sub-Committee also claimed that BSS was trying to change the system of measurement of the work done by the unit leaders so that the balance payment could be adjusted. Under the circumstances, without seeking any legal opinion, if the Kosi Project maintained that BSS was only morally bound, and not legally, then the government was, apparently, trying to protect it.[19]

Later, BSS started supplying bricks to the Kosi Project. This episode also found a mention in the 45th Report of the fifth Vidhan Sabha of Bihar (dated June 8, 1972) and was widely debated. The report said, "Similarly, in another instance, BSS had supplied bricks to the Canal Division No: 4, the Government charged BSS for excess consumption of coal at normal rate, and not at penal rate, on the plea that the penal rates were to be charged from only those contractors who misused the coal. As far as BSS is concerned, there is no report of any manipulation or misuse of the coal and the entire quantity was consumed in the chimneys only. The inefficient unit leader of the BSS mismanaged the things that led to extra consumption of coal and that has caused a great loss to BSS. Bharat Sevak Samaj is an institution with a very good record of service. The government considered its case sympathetically and ordered that the recovery of all the coal consumed by BSS should be done at the normal rate, although BSS has used more coal than what it ought to have."[20]

The PAC found it difficult to conclude that BSS was not a profit-making organization and if its service record was so good, how could its unit leaders be inefficient and bad managers. The PAC maintained that the patronage given to BSS was not justified and action should be taken against those who were guilty of lapses.[21]

7.8 BSS – Falling Short of its Aims and Objectives

Promoting human labour and jobs was the basic concept behind BSS. Earthwork meant jobs for the unskilled and did not need a huge capital. But BSS started making roads, bridges, houses and canals later where the labour involvement was less and capital costs were more. Its claim that it was a non-governmental and non-profit organization appeared to be hollow. It was building roads in Rajasthan and had taken contracts for making houses in Delhi. It made its presence felt in Maharashtra and Andhra Pradesh and complaints were pouring in from all quarters about irregularities in its working. Slowly, its working and government patronage to it were debated in the Lok Sabha where Ram Gopal Shalwale once commented, "Has not the Congress Party established Bharat Sevak Samaj to provide employment to its useless and discarded people; has Bharat Sevak Samaj not wasted crores of rupees of this country and is there not all kinds of corruption there? Crores of people are dying

in this country due to starvation….I want to know whether the Government of India will consider curbing the activities of Bharat Sevak Samaj?"[22] Indira Gandhi replied that BSS was not a political organization and there were people in it who were not with the Congress Party. According to her, the Congress, too, nursed a similar grudge against BSS.[23]

In April 1965, the PAC of the Lok Sabha (Third Lok Sabha) published its 34th Report, which highlighted a lot of irregularities in the working of BSS and virtually disturbed a hornet's nest. Nand Kumar Somani charged it with embezzlement, misappropriation, nepotism, and corruption and wanted the House and the government to take notice of the same. BSS was a body that, according to him, was enjoying the privileges of a voluntary body and at the same time the 'immunities' of a government department; otherwise, it was not possible to explain the large number of irregularities in the concessions enjoyed by it in complete violation of all GoI administrative and financial rules. He wanted to know who was responsible for the drama and who was responsible for perpetuating the stinking story of the misuse of public funds? [24]

While the debate was going on, a labour court in Delhi declared BSS an industry which was engaged in professional and profit-making activities.[25] The publication of the report of the PAC compelled Gulzari Lal Nanda to disassociate himself from BSS. Somani charged further, "The Chairman of the Gujarat Bharat Sevak Samaj Shri Raoji Bhai Patel wrote a book on Urine Therapy, where he advocated that every man and woman should drink his or her own urine as a solution of all ailments and this project was fully financed by the funds of Bharat Sevak Samaj. The preface or foreword of this wonderful book was written by no less a person than our Deputy Prime Minister."[26] Somani demanded a judicial probe into the whole matter and was supported by Prof. N.G.Ranga, a founder member of BSS, who had disassociated himself from the organization in 1960. Madhu Limaye, Ram Awatar Sharma, Gunanand Thakur and S.M.Bannerji were other MPs who actively participated in debates in Lok Sabha over the issue of BSS.

It was left to Lalit Narayan Mishra to defend himself and BSS, almost single-handedly in the Parliament. Charged by Gunanand Thakur of withdrawing Rs. 27 lakhs from BSS coffers and not furnishing the accounts, he once said, "In this regard, I want to say that this is totally false and no such thing has happened nor do I have any such information. The Irrigation Minister Shri Tej Narayan Ji had given a statement in the Bihar Vidhan Sabha, which suggested that BSS was formed with the efforts of G.L.Nanda Ji and L.N.Mishra. This is not true. I joined the Kosi BSS in 1955 when work started on the Kosi Project in 1955. He says that Nanda Ji was the Chairman of the Planning Commission and L.N.Mishra was the Deputy Minister in the Planning Ministry. This also is a false statement. I joined this government, in 1957, as the Parliamentary Secretary. And the public cooperation in the Kosi started in 1955-56. Neither was I the Deputy Minister for Planning nor…..am I also telling that I have got the information, for the first time, in this House, that BSS has received foreign money. I have no relationship, whatsoever, with such dealings…I was the treasurer of BSS and whatever money I possessed in that capacity has been audited and I have a certificate for that. I do not owe any pie." (Lok Sabha, March 22, 1968).

7.9 Constitution of an Enquiry Commission by the Central Government

The situation led to such a pass that the central government had to constitute a Commission of Enquiry (1968) under the Chairmanship of Justice J. L. Kapoor, a retired judge of the Supreme Court to look into the working of BSS. The terms of reference of the Kapoor Commission were:[27]

(i) To what extent were the grants, loans and other advances given by the Central Government to BSS utilized for the intended purposes?

(ii) To what extent were the loans and advances given to BSS by the Central Government not accounted for and what steps were taken for their recovery, and

(iii) To what extent were the accounts of BSS prepared as related to the Central grants, loans and advances and how far these were in tune with the assistance given to voluntary organizations?

The Commission was also expected to decide whether for making any supplementary grants, a precondition of submitting the detailed accounts could be made mandatory. It was expected to give its report within six months of its constitution.

7.10 Patna not Far Behind Delhi

All this debate was not confined only to Delhi but Patna was equally hot on the trail. Here, the working of BSS and the people connected with it were the center of attention in the Bihar Vidhan Sabha, Vidhan Parishad, newspapers and other public fora. The hot topic was the money drawn from the Community Saving Fund. In fact, Bihar preceded Delhi as far as this issue was concerned. Binodanad Jha, then Chief Minister of Bihar, had requested Brahmachari Swami Harinarayananand, Coordinator, Bharat Sevak Samaj, (vide his letter No: 2753 dated November 3, 1961) that,

"It is highly desirable, in the interest of the Bharat Sevak Samaj that the government comes out with a statement about the way the Community Saving Fund is utilized. The state government can come to any conclusion only when an audit report of the Fund is available. I hope that the Bharat Sevak Samaj will welcome the idea of an audit by some government agency."

But Swamiji rejected the suggestion (vide his letter No: BSS 4468/61), dated November 6, 1961 saying that, "BSS is a non-political and a non-governmental agency whose objective is to organize people for the programmes of nation-building and social development. It seems that the Samaj has initiated the process of auditing its accounts by an independent agency and, in the given situation, there is no need for an audit by a government agency." The Chief Minister had copied his letter to Lalit Narayan Mishra also, who replied through a letter dated November 9, 1961, "It is wrong to think that this fund is a government fund. Neither is it a grant or a loan. It is also not an assistance of any kind to Bharat Sevak Samaj. It belongs hundred percent to BSS - it is an amount earned by them. The Kosi Project came into reality when BSS surrendered this amount and did not claim it along with the other bills. The Kosi Project or any other Government agency has no right over this money."

The politics relating to the accounts of BSS started with the construction work of the Kosi Project. Demands were made that the accounts of BSS be made public or, at least, the welfare officer of the Kosi Project should have an eye on the account. Lalit Narayan Mishra was opposed to such a move and said that there was no mention of such a clause in the agreement between BSS and the Kosi Project. The latter had no say in fixing the wage rate for the labour, the percentage of savings and the cost of overseeing the Project. When it had nothing to do with all this, why should it be interested in what was paid to whom and what was deposited in the Community Savings Fund? This was an internal matter of BSS and the government should not interfere in the matter.[28]

7.11 A State Enquiry Commission

While a Commission was constituted in Delhi, Patna too did not keep quiet for long. On May 26, 1971 the government led by Karpoori Thakur constituted a Commission of Enquiry under the chairmanship of a retired High Court judge of the Patna High Court, Mr. Justice K.K.Dutta, to look into the various financial irregularities committed by the Bharat Sevak Samaj. The terms of reference of this Commission were: [29]

a. Whether the Bharat Sevak Samaj, on the plea of public cooperation, obtained construction work in the Kosi Project and through its unit leaders received advances of money between the years 1955 & 1962 out of which over Rs. 23 lakhs became irrecoverable on account of the non-existence of unit leaders recommended by Shri Lalit Narayan Mishra and Shri Lahtan Chaudhary and whether the sum of money or any portion thereof was defalcated thereby causing wrongful loss to the Kosi Project administration and the government?

b. Whether any fund called the Community Savings Fund was created for the execution of schemes of community benefit by deducting moneys payable to the unit leaders of the Bharat Sevak Samaj, which was given construction work including the earthwork in the Kosi Project through the central construction committee and the Kosi Project construction committee?

c. What was the extent of the fund of the Community Savings Fund and how was it deposited or accounted for?

d. Whether funds to the extent of Rs. 843,068 withdrawn by Shri Lalit Narayan Mishra and Shri Lahtan Chaudhary detailed herein before and any further sum or sums out of the Community Savings Fund were spent in development schemes contemplated by the fund, and if not, who are the persons responsible for the misappropriation, if any?

e. What were the assets and pecuniary resources owned and possessed by each of the two persons, namely, Shri Lalit Narayan Mishra and Shri Lahtan Chaudhary and their families, relations and other persons in whom they were interested prior to the commencement of works in the Kosi Project and thereafter.

The Commission was also expected to consider all the allegations and the evidence, if any, as may be placed before it by the government or members of the public or organizations.

Neither the Government Survived nor the Commission

Immediately after the constitution of the Dutta Commission, the government led by Karpoori Thakur fell on June 2, 1971. Lahtan Chaudhary explained his position in the Bihar Vidhan Sabha saying, "There are people who are saying that Bharat Sevak Samaj defalcated all the money. The first charge is that the work was executed through unit leaders which resulted in a saving of Rs. 23 lakhs and this was distributed by Lahtan Chaudhary and Lalit Narayan Mishra among their own henchmen…the right thing was that you should have filed a case…You should have said that

Lahtan Chaudhary is a guilty person…every pie that was given to Bharat Sevak Samaj is accounted for, it has been recorded, has been audited and the audit report is available…. if Karpoori Thakur is proud of his honesty then I would like to say that he should proceed with the enquiry but his intentions are not bona fide, he did all this just to defame me."[30] The government that took over dissolved the Dutta Commission on July14, 1971 through an official notification.[31]

It was reported in this notification that the Commission was constituted without going through the relevant papers of the concerned departments and since the matter related to a Central Minister and, on that basis affected the center–state relationship, the then Government did not place the papers before the governor prior to issuing the notification. It was also necessary, in view of the model code of conduct (1964) concerning ministers to which the state government was a signatory, that before constitution of any commission, the permission of the Prime Minister should have been obtained. Shri Lalit Narayan Mishra was a minister at the center when the advances were paid to the unit leaders, at the time when withdrawals were made from the Community Savings Fund and even on May 26, 1971 the day when the constitution of the commission was notified.

The new government was satisfied that there was no justification, whatsoever, for the constitution of such a commission. The notification also mentioned that, the unit leaders who were entrusted with the construction of the Kosi embankments were neither the creatures nor the agents of Shri Lalit Narayan Mishra and Shri Lahtan Chaudhary and that the project authorities entered into contract with them in their personal capacities for which they offered their own security besides collateral sureties and in case of default, action under Public Demands Recovery Act had already been initiated against them. As regards the Community Savings Fund, the state government maintained that it was neither the owner or even the legal trustee of the Fund but was merely acting as the temporary custodian of the said Fund, and was, therefore, under obligation to make advances out of the same on the requisition of Shri Lalit Narayan Mishra and Shri Lahtan Chaudhary who were authorities on behalf of the Bharat Sevak Samaj. The new government was satisfied that the monies so withdrawn by them out of the Community Savings Fund were utilized for the purposes for which they were meant and that duly audited accounts thereof were furnished to BSS by chartered accountants.

The most interesting part of this episode was that the same officer, R.N.Mandal, of the Government of Bihar issued the notification of the constitution and the scrapping of the Dutta Commission. It is a unique example of how the bureaucracy follows political diktats.

Vinayak Prasad Yadav had commented in the Bihar Vidhan Sabha that, "It is not an easy task to eradicate the bungling in the Kosi Project. Many governments tried to correct the situation in the past but the governments fell. You have seen that in order to scrap the Dutta Commission, the Karpoori Thakur Ministry had to go and the comment was that it was politically motivated."[32]

7.12 Kapoor Commission – Returns Empty Handed

The Kapoor Commission submitted its report in December 1973 and talked about many irregularities related to the works but it could not reach any conclusion because it could not get all the accounts related to the project.

7.13 The Story Ends

L. N. Mishra died in a bomb blast in Samastipur in Bihar, on January 2, 1975. It seems that the grudge that many leaders, opponents as well as colleagues, had with BSS had more to do with Mishra than with BSS and with his untimely death, curtains were drawn on that act of the drama. BSS also was not targeted anymore and it slowly faded away. Its name is heard only when it celebrates its installation ceremony in some town or on any similar occasion.

The last that one heard about the BSS was on August 12, 1986 when Ramanand Yadav, in reply to a question raised by Hamid Dalwai, told the Lok Sabha that the Kapoor Commission had recommended that General Financial Rules might be suitably revised and amended in order to facilitate the submission of annual accounts. The government had accepted the recommendation of the Commission and issued necessary amendments to the General Financial Rules to scrutinize the financial position of any institution. It was also decided that the recovery of as much of the amount, due from BSS, as possible should be made and the question of writing off should be processed by the concerned ministries in accordance with the rules and after all possibilities of recovery had been exhausted.

Upon examination of the issue of misuse of official positions by political figures, it was concluded that the material available in the Commission's Report was neither sufficient to justify any prosecution nor would it serve any purpose to start another investigation. The government had also issued instructions reiterating the absolute necessity of complying with the rules for release of loans and grants to voluntary agencies and had directed the concerned ministries to exercise

regular and effective supervision to ensure that such situations did not arise in future. However, taking into account the considerable lapse of time, it was decided that a further 'inquiry to fix individual responsibility, would not serve any useful purpose."[33]

7.14 Unintended Results of a Well-Intended Programme

Behind the setting up of BSS, there was the spirit of looking forward after centuries of alien rule in the country. The country's leadership had an intense desire to do something for the masses and the people had unflinching faith in them. The leaders wanted people to own governmental programmes and participate fully in realizing their dreams. BSS was supposed to help link the two. The official resources in men and materials were not capable of coping with all the tasks in the post-independence period and there was a likelihood of vital gaps remaining despite best efforts. This could have delayed development and led to frustration. On the other hand, there were volumes of untapped knowledge, experience, skills, energy and other resources which were available for promoting nation-building and Nanda did not want all this to go to waste. He saw a future in BSS.[34]

Two leaders of that time, however, had expressed their doubts about the success of the BSS experiment. First was Shyama Prasad Mukherji who had cautioned that if checks were not exercised, there might be political misuse of BSS. The other person was H.N.Mukherjee who had expressed doubts over the outcome of this entire exercise in the Lok Sabha. He had said, "That is the lesson of China. When you get the people together, when you touch their heart strings, when you give them the realization that those who were tyrannizing over them for generations are no longer going to have the cream of their land, and labour, when you give the people the realization that the country belongs to those who work for the country, it is only then that you can get a real, psychological change that is the kind of change we want in this country. That is the change unfortunately this Government is not working for. That is why I have not very high expectations of what might happen."[35]

The doubts expressed by both the leaders rang true as later events showed. Whatever happened in the Kosi Project was best summarized by Baidya Nath Mehta in the Bihar Vidhan Sabha, "The works that the Bharat Sevak Samaj did, it took all the profits and money out of the same... They murdered public cooperation... misused public money. Apart from the corruption in the building of the Kosi embankments …they have exploited the state in the name of public undertaking."[36] Even if we forget corruption, bungling, plunder, non-submission of accounts, sinking of the capital and not presenting the account books for audit, etc. it cannot be denied that there was political misuse of the organization. The kind of political climate and responsible society that is needed for enlisting public cooperation for civil works, as existed in China, was not there in our country. All our efforts remained superficial and there was lack of accountability on all fronts. One cannot blame an individual or a political party for this lapse, but in the absence of political will and an honest participation of the public, such experiments will always fail.

This question is worrisome for all concerned because public cooperation and people's participation remains as relevant today as they were fifty years ago. At that time, almost all the concerned parties had contributed with their might in performing the last rites of the voluntary efforts so that contracting business could flourish. Looking from a common person's angle, it appears that politicians wanted to earn a big name for themselves out of the success of the Kosi Project without ever sacrificing their material interests in it. These expectations were contradictory to each other.

The role of the bureaucracy, engineers included, is a bit different. It neither wanted any name and fame then nor does it want it now. Their jobs should be secured and beyond that they are not bothered about anything. That is how corruption prospers. Unfortunately politicians swear in the name of God / Constitution to uphold the dignity of their office and the bureaucrats (engineers included) are governed by the ethics of their profession while the common masses are left with no choice than to believe all of them. It is only the contractors who are the most honest characters in the drama. They enter the field to make money and make their intentions clear to all concerned from day one.

Acharya Kripalani had once made a scathing attack in the Lok Sabha, on the role of the bureaucracy. He said that when the issue of rehabilitation of the refugees from Pakistan came up on an emergent basis, two followers of Gandhiji came forward to work with the refugees and help in rehabilitating them. One of them was Acharya Vinoba Bhave and the other was Jajuji. Both of them were thoroughly disillusioned with the state of affairs that nothing could be done with the attitude of the establishment and with the help of the bureaucracy. Vinoba Bhave was so disappointed with the 'help of the Government' that he went back and started the Bhoodan movement where no such 'help' was needed from the Government. Kripalani maintained that such initiative and enthusiasm was possible in the political set up of China but not in a democratic country like India.[37] It goes to the credit of

the corrupt officials that they induced a saintly person like Vinoba Bhave to change his mission and initiate the Bhoodan movement in the country.

Also, if the attitude of the unit leaders is any indication of the functioning of our society, it is a slap in the face of society itself and that divests each one of us of the right to criticize. It becomes very easy for politicians to say that leaders are not dropped from the sky, they also are a part of the same society. And if that be so, who will tell the other that he is at fault?

7.15 Lessons

The Government of India is now quite intent on launching a similar but far bigger project in the name of linking India's rivers. The Kosi story will, in all probability, be repeated there as a huge quantity of earth will have to be moved. We will soon listen to terms like public cooperation, people's participation, volunteerism, *mukhias*, Panchayats, national pride, employment generation, poverty eradication, China's example and so on. Will we remember then that we did all this some fifty years ago and successfully cremated these ideas then? The Kosi Project is in shambles. It neither irrigates nor protects people against floods. The power house is reduced to a scrap yard. Carrots of another dam are dangled before the people. Can we afford the same at the national level? These questions should be answered and public cooperation in the Kosi Project should provide the guideline.

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8

Trapped Between the Devil and the Deep Waters

The Kosi Project was technological quick-fix to a government's political compulsion. Hundreds of thousands of unsuspecting villagers, desiring a way out of the annual trauma of floods, saw their lives become an endless nightmare. The government's response to their perils can only be described as callous. Even today, no official and reliable information is available about the number of people — or even the number of villages — within the Kosi embankments. There is a Rehabilitation Office at the district headquarters of Supaul but even there no reliable information about the rehabilitation status of the embankment's victims is available.

The issue has been debated in the Bihar Vidhan Sabha and a list of villages trapped within the Kosi embankments was placed on the table of the House on December 18, 1958. This list is incomplete and misleading as it contains the names of villages that are completely outside the embankments. In 1992 the Government of Bihar asked the Collectors of Darbhanga, Saharsa, Madhubani and Supaul to submit a list of villages trapped within the embankments. This list too is incorrect. A list of villages provided by the Rehabilitation Office at Supaul contains 285 villages, which is also incorrect. Thus the information about the embankment victims differs from source to source. In this chapter, we attempt to prepare a list of such villages depending on the maps of the affected blocks, maps of the polling booths prepared by the Election Commission and the Census Report of 2001.This list has been verified at different stages and it is hoped that it is correct.

It is unofficially stated that about 800,000 persons are living within the embankments. These are the people who face the onslaughts of floods on an annual basis. The people who have sacrificed their interests for the common good of the society have only received neglect in return and no one seems to have the time to look into their grievances.

The official callousness was highlighted by the intervention of Rasik Lal Yadav, while speaking on the Bihar Appropriation Bill 1959 in the Bihar Vidhan Sabha, on March 20,1959. He said, "The situation with the revenue department is such that its Circle Officers chase the people and extract revenue from them while their houses are submerged in water. They even chase those who grow only cucumbers to meet their ends. Those who live in the countryside of the embankments are told to go within the embankments for their agriculture. When they go within the embankments, the boatmen managing the ghats chase them for ferrying costs. The Kosi Project was taken up to protect the people and not for chasing them away."[1] Forty-nine years later the situation remains the same in the Kosi basin except that most of the people who were rehabilitated outside the embankments have gone back to their villages within the embankments.

8.1 Seeking Rehabilitation

The first reference to any rehabilitation plan was made by Rai Bahadur A.N. Khosla, then Chairman of the Central Board of Irrigation and Power, in 1947, in the context of the proposal for the Barahkshetra Dam on the Kosi River. He said, "It is desirable that the sacrifices and benefits be uniformly distributed. In case where no new areas are available for resettlement, this can be achieved by the owners of the areas benefited by irrigation being asked to part with a percentage of their land corresponding to the ratio which the submerged area bears to the total area benefited, subject to the condition that no holding shall be reduced below a minimum economic holding…The problem of compensation and resettlement has to be faced with vision and sympathy. Compensation should as far as possible be land for land. Model villages with modern amenities should be set up in the new lands in place of old dwellings which will be submerged."[2]

This was a general statement on rehabilitation. As far as the Barahkshetra Dam was concerned, it was not a matter of local concern as almost all the displacement and rehabilitation was going to take place in Nepal. The embankments on the Kosi were not in any reckoning then.

The recommendations of Kanwar Sain and Dr K.L. Rao, following their visit to the Hwang Ho Basin in China, became the base line for the rehabilitation in the

Kosi Project (1953) where a sizable population was going to get trapped between the embankments. They had written about rehabilitation in such river schemes, "There were 240,000 persons in the detention basin. About 80,000 of them have been rehabilitated outside the basin in other areas. The remaining 160,000 will continue to remain in the basin and cultivate the land there. As the basin is likely to be submerged only once in 10 to 15 years, there will be some inconvenience and loss caused to them only at such long intervals. Their places of habitation have been shifted to higher spots and have been protected by local dykes against the highest water level. In fact the productivity of the farmland will be somewhat higher. Whenever any loss to crop actually takes place, the land tax will be remitted and suitable compensation will be paid for such loss."[3]

This suggestion of Dr K.L. Rao and Kanwar Sain paved the way for solving the rehabilitation problem of the Kosi embankments. Those who were going to be trapped within the embankments were a worried lot as their future was at stake. The statement of Lalit Narayan Mishra on December 2, 1954 in Patna and the findings of the Poona Hydraulic Laboratory helped to temporarily convince the people that their lives within the embankments would not be threatened. (See also Chapter 2, section 2.10)

Long Term Rehabilitation

To start with, long-term rehabilitation was a non-issue in the Kosi Project. Stray voices were heard after it began and these too were limited to encourage those likely to be trapped to sacrifice their lands for the larger interests of the society and for the building of a new nation. Flood victims of the Kosi Basin were repeatedly told that the proposed embanking of the Kosi was a great plan mooted to protect them from devastating floods in the river. It was aimed at converting the bane of the river into a boon. It was a very costly scheme to tame the river and provide succor to the people. The people were told to be prepared to readily make some sacrifices to achieve these great targets. The Administrator of the Kosi Project, T.P. Singh, reported in 1955 that, "Fair compensation will be paid for the land likely to be trapped within the embankments at the soonest. People will not have to run for this. The embankments will not bifurcate any village nor would any house be destroyed because of the alignment of the embankments. Should any house be demolished, immediate solution to the problem will be found out and staff scarcity will not come in the way." [4] Mahi Narayan Jha, Public Relations Officer of the project added, "although no decision has yet been taken regarding the situation of those living within the embankments, the results of the experiments from the Poona Laboratory are encouraging and it is being understood that they will not be inconvenienced much."[5]

The issue of compensation, rehabilitation, and well-being of those living within the embankments remained unaddressed for a long time even after the start of the construction work and nobody knew what was in store for the people who would become hapless victims of the Project.

On March 2, 1956, the Kosi Control Board met in Patna to discuss the issues of compensation and rehabilitation. It is reported that the members of the Central Water and Power Commission were opposed to paying any compensation to the embankment victims. But Ram Charittar Singh, then Irrigation Minister in Bihar, and T. P. Singh prevailed upon their views. The Chief Minister also, supported the views of the latter. The Chairman of the Central Water and Power Commission was reported to be of the view that payment of compensation in one project would set a wrong precedence and people would start demanding rehabilitation in all such projects in the future. [6]

Lalit Narayan Mishra Demands Rehabilitation

A public meeting of BSS workers at Ghoghardiha on June 11, 1956 concluded, "This conference invites the attention of the Government of India and the Government of Bihar towards the sad plight of the people trapped between the river and the embankments. The villages of Karhara, Loukahi, Dhanchhea, Bagewa, Aloula, Hatni, Nighma, Shatrupatti, Saharawa, Naua Bakhar (Phul Paras *Thana*) and Bishunpur, Tardiha, Sikaria, Mahisam and Mataras along the western Kosi embankment are greatly distressed. The villages located within two or three kilometers of the embankment will face the wrath of the river. These villages will be the first to get submerged and their crops will be lost. Their future is bleak and there is no hope that they will ever get respite from the floods of the Kosi."[7] It also demanded that wherever possible, the villages be protected by ring bunds, flood victims be resettled, proper arrangements be made for providing employment to embankment victims and certificates be issued to them for waiving land revenue and recovery of loans.

Lalit Narayan Mishra, who had said on December 2, 1954 that the problem of rehabilitation was not very serious and there would be a further rise of only four inches in the flood levels, proposed this resolution. It was seconded by Rasik Lal Yadav. Following this, people kept on demanding rehabilitation and the officials kept on harping about the details that would

come from the Poona Laboratory. These findings became an object of ridicule during the floods of 1956. (Since Mishraji had already given a forecast that the flood levels would rise by only four inches, there was no need to wait for the reports of the Poona Laboratory.)

Where is the Much Promised Relief?

T. P. Singh told media persons on June 11,1956 that a vast tract of Saharsa district was safe from floods because an embankment had been built. The area that once resembled an ocean had been turned into lush green fields. He maintained that it was not possible to protect the people living within the embankments from floods and that arrangements were being made to shift them to safer places.[8]

These views were officially nurtured but the reality within the embankments was entirely different. In the Bihar Vidhan Sabha, Janaki Nandan Singh, MLA narrated the peoples' sufferings, "I have traveled through that area in a boat and the pathetic condition of the people that I have seen in those places will make anybody cry. They do not have a dry piece of land even for answering nature's call. There is no crop and they are face-to-face with death. Relief could probably have saved them from this disaster but it has been suspended for some days….You claim to be a welfare state and on the other hand thousands of people are facing starvation…. It is a pity that you say that there is no money. Then what is the government for?"[9]

Agitation for Rehabilitation

People's dissent simmered slowly as they began to understand the impact of the embankments. Braja Nandan Azad wrote that a movement was launched under the leadership of Bhushan Gupta, Chairman of the Saharsa District Board in the middle of 1956. He took up the cause of the people whose houses and lands were trapped within the embankments because it was certain by then that they would face the devastating currents of the river for all times to come after the river was embanked. He baulked at the various official assurances that nothing untoward would happen.[10]

The assurance that 'nothing untoward will happen' raises many crucial questions. One can understand that the common masses are illiterate and simple and do not understand engineering and that they cannot understand the benefits of the Project but it is amazing to note that even the leaders did not know that after the river was embanked, all the water of the Kosi that was flowing through its various channels would flow within the embankments. Did they not know that the flood problem, which the entire Kosi belt faced, would become exclusive to the unfortunate victims within the embankments? Did the experts not know what had happened in case of the Hwang Ho River in China or the Mississippi in the USA? Did they not know that the Chinese people were sick of the embankments on their rivers and they had already invited Russian engineers to suggest a solution to their problem much before our experts visited China? Did the engineers at the Poona Hydraulics Laboratory not know that the land within the embankments sloped towards the west and that the river water would not follow the law of averages, or that it would not flow smoothly with an added depth of 10 centimeters? What sort of model had they created in the Poona Hydraulic Laboratory that did not resemble the field conditions and the villagers had to educate them that the land within the embankments was tilting towards the west? Did the leaders of Bharat Sevak Samaj, who had the mandate of 'breaking and shaking mountains', not know that the people would have to be shifted from their villages?

The answer is, they all knew it. According to Braj Nandan Azad , "At the earlier stages this issue was not allowed to be pressed because the cost of the Project would go up and the Project itself might be threatened with rejection. That fear is over. It should now be possible for the authorities concerned to plan evacuation." [11] His views were reinforced by M.M Prasad (MLA) who wrote, "Bihar is entitled to ask and does ask if the Bihar Government realizes even now that they as well as the Union Government have been less than fair, have been, in fact, callous towards the fate and fortune of a population …in exact figures of 1.91 lakhs; 45,291 houses of which 2528 are pucca and cultivated area of 46,331 hectares over half of which is paddy producing. …It is admitted by the chief of the Central Water, Power and Irrigation Commission, that even a flood of 2 lakh cusecs(5,670 cumecs) overtops the banks and it may so happen that in the absence of relief generally available from the spread of floodwaters…the consequent inundation may endanger both life and property and create an intolerable situation…If the people concerned are to be left to the tender mercies of demonstrations in the Poona Institute, their future can be well imagined."[12]

The Poona Hydraulic Laboratory was held in high esteem in 1957 and T.P. Singh, defended its findings saying, "In the model tests silt conditions cannot be reproduced. That is why unexpected deterioration in the condition of several villages within the embankments has been witnessed, 20 villages found to be badly submerged in a low flood of 190,000cusecs in 1956 are shown as un-affected in the test at Poona with 900,000cusecs. In the current season, with 266,000cusecs, nearly two dozen villages have become unlivable. Some villages close to the embankments have been eroded. The place of attack will keep on shifting from

year to year. In this background, the public demand that some ameliorative measures should be immediately taken in hand cannot be disputed."[13]

M.M. Prasad, raised other concerns also. He said, "I would invite the attention of Irrigation Minister to the problem of the Kosi that confronts a population of 1.5 lakhs. It cannot be solved in the research laboratory at Poona. Kosi is a meandering river and the excessive discharge of water causes great difficulty to the people. Sir, the sooner the problem is tackled, the better it will be for the people and the government. In spite of the efforts that you have made the problem remains where it was."[14]

In a letter to the editor of Aryawarta, Lahtan Chaudhary, Kamta Prasad Gupta, Bhola Sardar and Khub Lal Mahato wrote in September 1956, "Lakhs of people trapped between the two embankments of the Kosi curse their fate and suffer from a fear complex. The Government, instead of alleviating the sufferings of the people, has added fuel to the fire. The concerned officials (have) never bothered to inform the people that a danger looms large over them and that they should be prepared to shift any moment. The people left most of their land, on which they could have grown some crops, fallow… The relief distribution has also been stopped. Many villages, located outside the embankments have become pools and their plight has become even worse."[15]

It is unbelievable that these acclaimed leaders of their times did not guess the impact of the embankments. As leaders they actually should have been aware of the uncertainty, at the very least, but they chose to keep quiet. Why were such conditions created that a large number of people had to curse their fate subsequent to the construction of embankments in the Kosi Project?

Lahtan Chaudhary Demands Rehabilitation

After the second general elections were over in 1957, the leaders found some time to show sympathy to the embankment victims. Referring to the views of the agitators who were demanding rehabilitation, Lahtan Chaudhary, among other things, suggested that.[16]

(1) The government should immediately announce that it would assume the responsibility of the well-being of the people likely to be trapped within the embankments.

(2)Survey parties, in good numbers, should be sent to assess the details of the houses and agricultural fields of every family so that they are properly compensated for, in the time of their need. This should be completed before June because the floods will hamper the work after that. In addition, the position of the land also changes after the floods.

(3) The villages that are likely to be hit by floods first, should be relocated before the rains and they should be informed about this decision.

(4) Those who do not want to move or those the government feels need not shift, should get waivers on government loans, land revenue, and other taxes. Proper arrangements for providing them with relief should be ensured and a separate officer appointed to avoid delays.

8.2 The Government Proposes a Deflated Rehabilitation Package

In July 1957, it was water everywhere, both inside and outside the embankments. It was inside the embankments because that was the route the flowing river could take. It was outside the embankments because the tributaries could not empty their waters into the main river. Even a blind person could foresee what would happen on the ground and it is hard to believe that the politicians and the planners could not foresee the coming events. They deliberately kept people in the dark and, many a times, they took refuge in the technical study being done at the Poona Laboratory.

The people mounted pressure on the government for relocation but not enough land was available for such massive rehabilitation. It was never anticipated that people would be so organized in the years to come, that they would remind their leaders of their obligations to the embankment victims. If that was known earlier, the government would have been ready with a rehabilitation package. It realized that if the total value of all the assets had been accounted for it would have to pay something to the tune of Rs. 10cr to Rs. 11.5cr. This amount would have disproportionately increased the cost of the project that was estimated to be Rs 37cr.

The state government conducted a survey of the villages trapped within the embankments and found out that this land was about 260,108 acres (105,307ha). If it chose to compensate agricultural, habitation and orchards land @ Rs 500/- per acre, uncultivated agricultural land @ Rs. 200/ per acre and fallow land @ Rs. 100/- per acre, it would have to incur the following costs,

Agricultural land	Rs. 7,26,91,000/-
Non – agricultural land	Rs. 1,13,47,800/-
Orchards	Rs. 4,56,000/-
Land unfit for cultivation	Rs. 50,49,200/-
Habitations	Rs. 32,91,500/-
Total	**Rs. 9,28,35,500/-**

Similarly, if houses with *pucca* roof were compensated @Rs. 5/-per sq. ft., tiled roof houses with *pucca* walls @Rs. 3/- per sq.ft., *kuchcha* houses @Rs 2.50/- per sq. ft., *kuchcha* houses with tiled roofing @Rs. 2/- per sq. ft. and *kuchcha* thatched houses @Rs. 0.75/- per sq. ft.; and their total value depreciated between 10 to 60 per cent, the government would have to spend the following amounts:

House Construction	Rs. 65,94,904/-
Tanks	Rs. 27,92,325/-
Wells	Rs. 5,16,573/-
Trees/ Plants	Rs. 8,44,888/-
Total	**Rs. 1,07,48,690/-**

Thus, the total compensation cost was valued at Rs. 10,35,84,190/-. Adding to this the cost of necessary acquisition @16 per cent, the total rehabilitation package would be somewhere around Rs. 11.90cr.

The government knew very well that even after paying such high rates for acquiring land, it would not be available. The only solution it saw was in adjusting the agricultural pattern and crop cycle. It also realized that if the entire property worth Rs 10 to 11.50cr had to be compensated for, then the estimated cost of the Project would balloon and the Project itself would have to be shelved.[17]

It was then decided that the houses would be relocated outside the embankments and the farmers would till their ancestral land to make their living. Such an important decision about the fate of the persons displaced by the embankments was taken without any consultation and agreement with the concerned people. It was done exactly in the manner of arranged marriages in our society. It is the parents alone who know what is in the best interest of their daughter, but she has no say in making a decision about her future. When it was confirmed that such a decision would alienate people from their ancestral land, the government further decided that it would provide a tank valued at Rs 10,000/- for every 2000 population and a tube well @Rs 500/- for every 100 persons. A boat, valued at Rs 250/- each, was proposed to be given for a population of 50 to facilitate travel to their agricultural land within the embankments and the land was proposed to be acquired @Rs 800/- per acre. Providing for 15 per cent as the acquisition cost, the revised rehabilitation package read as under,

Land for housing	Rs. 75,64,400/-
House construction	Rs. 1,14,22,990/-
Tanks	Rs. 5,70,000/-
Wells	Rs. 5,70,000/-
Boats	Rs. 5,70,000/-
Total	**Rs. 2,12,67,390/-**

In his memorandum to the council of ministers, the Administrator, T. P. Singh, suggested that since the displaced persons of the Kosi embankments were not yet compensated, their case should be sympathetically looked at.[18]

The government had a feeling that after giving some doles to the embankment victims, they would all get busy snatching the alms. If the decisions were left to the engineers of the Central Water Commission, they would not have allowed even this much relief. They had made their intentions very clear in the meeting of the Kosi Control Board on March 2, 1956. It is customary to stitch caps to fit on to the head but what was happening here on rehabilitation issue in the Kosi Project was exactly the opposite.

In reply to a question of Parmeshwar Kunwar in1958, the then Chief Minister of Bihar suggested, "It will not be correct to say that all the villages located within the embankments will be swept away. Some villages may face this problem. It is also not possible that all the land located within the embankments will be rendered unfit for cultivation. It is quite likely that while some of the lands may become infertile, at the same time, the fertility of some lands may improve….It cannot be said with certainty that all the people residing within the embankments will have to move outside, but it is a fact that people residing in those areas fear that such a situation may arise. The state government has approved a scheme for the permanent rehabilitation of the people in the concerned area."[19]

After their return from China, Kanwar Sain and Dr. K.L.Rao had used the same language but was the line of action taken by the government adequate? If a farmer's land improves because of fresh silt on his land, he would be a gainer; but in case of a farmer whose land is eroded, waterlogged or sand cast his interests would suffer. Erosion, waterlogging or sand casting are problems that keep on changing location as well as magnitude.

After a lot of persuasion, Dip Narayan Singh, replying on behalf of the government in the Bihar Vidhan Sabha, on December 3,1958 assured the House that the government would provide for:

1. An equivalent area of homestead land at a reasonable distance from the embankments on the outside so that the villagers might live as close as possible to their cultivable land within the embankments.
2. Additional land for community services like schools, roads, etc.
3. Water supply at the rehabilitation sites with the help of tanks, tube wells and wells.
4. Grants for building houses.

5. Boats to be used as means of transport to and from the agricultural lands lying inside the embankment.

On February 15, 1960 when the Bihar Vidhan Sabha was debating the annual budget, the House was told that 70 out of 304 villages had been rehabilitated in the Kosi project and efforts were on to rehabilitate the remaining population. Ramanand Tiwari, MLA, passed a scathing remark on the Government's rehabilitation performance. He said, "If you have resettled 70 villages in two years time and keep the same pace to resettle people, you are going to take another nine years to complete the job. Do you expect me to pat you on your back for this achievement?" Ramanand Tiwari had no inkling that the job was not going to be completed even in nine years.

Payment Schedule Defined

It was not possible for the government to provide compensation for land or give 'land for land' but it decided to compensate for the houses. In 1963 Debesh Mookerjea, Chief Engineer of the Kosi Project, suggested that the scheme of permanent rehabilitation would include house building grants equivalent to the full value of the house left on the river side, without making any deduction on account of these houses which would be left with the displaced persons. It was decided to pay the house building grants in installments as indicated below:

(1) for a value of Rs. 200 and less, the payment shall be made in two equal installments:

(2) For a value between Rs. 200 to Rs. 5,000/- in three installments;

(3) For a value above Rs. 5,000 in four installments.

The first installment would be paid as soon as the plot of land acquired by the government was allotted. A scale of expenditure to be incurred on construction of houses, out of the total amount received as the value of the existing houses, was then fixed as below:

(i) 75% must be spent out of the amount valued up to Rs. 1000.

(ii) 60% for amounts between Rs.1000 to Rs. 5000.

(iii) 50% for amounts between Rs.5000 to Rs. 15000.

(iv) 33% for amounts between Rs.10000 to Rs. 15000.

(v) 25% for valuation above Rs. 15000.

According to Mukherjea, "(The) state government has, however, undertaken a livelihood cause and compilation of data for small-scale and cottage industries in order to plan out suitable schemes for the economic uplift of the rehabilitated population."[20]

8.3 Crawling Performance of Rehabilitation Schemes

Promises from the politicians and officials notwithstanding, the actual work of rehabilitation on the ground was in a very poor shape. Baidya Nath Mehta (MLA) made a fervent appeal to the government in 1966. He said, "When you can arrange for the people who have come from Pakistan, why cannot you rehabilitate these people who are suffering mainly due to your own doing. They had cooperated with you and not only did they cooperate, they offered *shramdan* and made this embankment without charging any wages while they knew that they would suffer in the future because of this embankment ... You reach them only when the elections are due, make tall promises and ask for their vote. You promise that you will waive the rent, will solve the land problem and build house for house. Once the elections are over, you set yourself into reverse gear."[21]

By 1970, some 6650 families were relocated outside the embankments. This meant that over 38,000 families still lived inside them. The government faced difficulties in land acquisition while the people had their own set of problems. The rehabilitation sites were far away from their fields and commuting was a major problem because one had to cross various channels of the Kosi. Politicians had promised that boats would be provided but they were not made available. The major problem with rehabilitation, it was argued, was that people were attached to the lands of their ancestors, and were unwilling to stay away.

Parmeshwar Kunwar (MLA), however, blasted this argument in 1968. Referring to his own village Tarahi, located within the embankments, he said, "The rehabilitation problem is not yet sorted out there. They have been left to the mercy of God. They are told to settle down 4 to 5 miles in the west in Darbhanga district where they do not want to go…. Today if the people go to the officials, they tell them to go to the minister and when they contact the minister, he says go and talk to the officials. There are 1200 bighas of land that have been acquired for resettlement and the people are willing to go there but they are not permitted to get on to this patch of land. The people are in trouble and the government says that the people are too attached to their ancestral land."[22] Later, the lands on which rehabilitation sites were provided slowly became waterlogged and unfit for living.

According to a Public Accounts Committee Report to the Bihar Vidhan Sabha, between 1958 and 1962, some 12,084 families were allotted homestead land outside the embankments and Rs. 16.73 lakhs were granted to them as the first installment. When there was no progress in the work, the Project authorities

decided to persuade people to shift to new locations and if they did not agree to move, the committee recommended that recovery proceedings be initiated against them.[23]

Another committee of the Bihar Vidhan Sabha reviewed this problem from a different angle. It said that the people, whose interests had been totally sacrificed in building the embankments on the Kosi, spent a nomadic life for four to five months a year. "It is a pathetic situation. Every year thousands of people are appointed to the Project and the contractors swindle lakhs of rupees. But the affected people neither get the jobs nor any preference in the award of contracts. They are ignored. Their number is negligible in work charge appointments let alone the permanent jobs in the Project. This situation should not be taken lightly. It can assume serious proportions any time and may lead to a law and order problem... The rehabilitation scheme in progress is totally inadequate. The farmers and the labourers are given only homestead land. They are not given any land for their livelihood. No industry is being opened in the area. All that the people receive is about 4 decimals of land and some grant to build thatched houses for themselves. Most of this money is spent on collecting the grant."[24] According to this report, till 1972-73, a sum of Rs 1,75,28,392/- of the total allocation of Rs. 2,12,67,390/- had been spent on rehabilitation. At that point 32,540 families had been given the grants of which only 10,580 were given the second installment. Nobody had qualified for the third and final grant since none of the houses were complete. A major constraint to building houses was that the rehabilitation was looked after by the Rehabilitation Department while the Kosi Project carried out the measurements. People had to run after officials at two places many times.

8.4 Displaced Profiles

Not much has changed since Rasik Lal Yadav charged the government with mismanaging the Kosi Project except that most people who were given sites for rehabilitation outside the embankments, have returned to their old villages within the embankments. The first reason for their return was they did not want to walk daily to their fields from the sites where they had been rehabilitated. As the spacing of the embankments was about 10 kilometers, they had to walk a long distance everyday and agriculture became unmanageable. It so happened that the villages that were close to the embankments got rehabilitation sites just outside the embankment. As the distance of the village to be rehabilitated on the riverside increased from the embankment, its rehabilitation site also went farther from the embankment on the countryside, with the result that the village that was farthest from the embankment, was resettled at the farthest point outside the embankment. This caused immense hardships to the people. Secondly, the rehabilitation sites subsequently became waterlogged because the embankments blocked the drainage of the country. Thirdly, the people were emotionally attached to their ancestral lands. When people returned to their old villages, their rehabilitation files were closed as the government felt that they were not interested in rehabilitation and wanted to live closer to their ancestral land.

Table 8.1 gives an idea of the number of villages and the population (2001) trapped within the Kosi embankments. It must be clarified here that,

(a) It is widely accepted by those concerned about the Kosi problems that 304 villages are trapped within its embankments. Officials at the Rehabilitation Office at Supaul too accept this figure during conversations but their official list contains only 285 villages. Similarly, no authentic information is available about the number of people residing within the embankments and this figure ranges from 0.8 to 1.6 million. We have tried to end this speculation and have found that there are 380 revenue villages spread over four districts and 13 blocks and the population of these villages is about 9.88 lakhs (2001 census).

(b) The western Kosi embankment terminates at Ghonghepur in Mahishi block of Saharsa district. South of Mahishi, are Simri-Bakhtiyarpur and Salkhua blocks of the same district. The Kosi Project identified only those villages of these two blocks as affected by the embankment that were located within the eastern embankment and the river, when the eastern embankment was being constructed. The villages that were located on the west of the river in these two blocks (See Fig.3.5), were not counted as displaced villages and hence were not entitled to any rehabilitation. Kabiradhap village of Salkhua block is an example of this discrimination. Its condition is equally bad, if not worse, as compared to the other villages defined by the Project as villages entrapped within the embankments. Floodwaters of the Kosi are pushed toward this village because of the eastern Kosi embankment and the situation there is no less alarming than the corresponding villages within the embankments. We have included Kabiradhap and other such villages in our list.

(c) Some villages, like Mahishi of Saharsa district are included in the list although most of its population, barring Kothia Tola, lives outside the eastern embankment. The reasons for its inclusion are: (i)

Most of the agricultural land of the village is located within the embankments, (ii) the embankment is built on the land of this village, (iii) a sizable amount of land of this village has been acquired for rehabilitation, and (iv) the remaining land of the village is now waterlogged. All this has happened because of the embankments and hence the village is included in the list.

d) It would have been in the fitness of things that all those villages of Khagaria district that suffer floods because the eastern embankment of the Kosi pushes floodwaters toward them were included in the list. The same thing holds good for Singhia block of Samastipur district and many eastern blocks of Darbhanga district. The flood events south and west of Ghonghepur should be dealt with separately and suggest more studies in that region. We shall restrict ourselves to the districts of Saharsa, Supaul, Madhubani and Darbhanga, for the present.

(e) Only revenue villages have been listed. If the hamlets are to be numbered, the figure will go well over a thousand. The population of the villages, although taken from the Census, is also only approximate since no one knows who is located where within the embankments. Frequent erosion uproots people and they go off to unknown destinations. It does not take much time to turn a thickly populated village into a deserted village.

(f) There is some confusion due to the reorganization of Panchayats. For example, Nima village with many hamlets is spread over Madhepur block of Madhubani and Kiratpur block of Darbhanga districts. Interestingly, Nima is not a revenue village. Likewise, Simri Panchayat was a part of Jhagarua Panchayat not many years ago. To tackle such problems, we have taken 1981 Census maps for reference and the location of embankments within them, as provided by the block office and the election office, to decide whether a village is located on the countryside or riverside of the embankment.

The literacy figures in Table 8.1 are quite shocking. The literacy level of Saharsa district was only 39.28 per cent (Male 52.04 and female 25.31) according to the 2001 Census). In the same Census, the literacy figure for Bihar state is 47.53 per cent (Male 60.32 and female 33.57) while at the national level the corresponding figures are 65.38 per cent (Male 75.85 and female 54.16). Bihar was the only state in the country with a literacy level of less than 50 per cent in 2001. Within Bihar, four districts in the Kosi basin Supaul, Saharsa, Madhubani and Darbhanga; occupy the 7th, 9th, 13th and 16th position from the bottom.

Table 8.1:
Block Wise Demographic Details of Villages Trapped Within The Kosi Embankments

District	Block	No. of Villages	Total Pop	Male	Female	Total SC Pop	Male	Female	Total Literates	Male	Female	Total Literacy %	Male Literacy %	Female Literacy %
Madhubani	Laukahi	12	47419	24697	22722	5211	2724	2487	14080	10989	3091	29.69	44.49	13.6
	Ghoghardiha	19	54289	27865	26424	3649	1868	1781	16874	12162	4712	31.08	43.64	17.83
	Madhepur	42	96679	50029	46650	17953	9196	8757	23958	17663	6295	24.78	35.3	13.49
Supaul	Basantpur	26	24520	12998	11522	4124	2139	1985	8347	5935	2412	34.04	45.6	20.93
	Nirmali Bhaptiahi	40	76403	39552	36851	9157	4652	4505	23308	18018	5290	30.5	45.55	14.35
	Kishanpur	32	100409	51939	48470	13831	7124	6707	28592	21753	6839	28.4	41.88	14.1
	Marauna	37	113192	58359	54833	13305	6783	6522	28310	23200	5110	25.01	39.75	9.31
	Supaul	27	64563	33876	30687	9388	4912	4476	17020	12970	4050	26.36	38.28	13.19
Saharsa	Navhatta	43	112849	58519	54330	15334	7965	7369	32589	23193	9396	28.87	39.63	17.29
	Mahishi	51	133694	69642	64052	28369	14583	13786	38275	26238	12037	28.63	37.68	18.79
	Simri Bakhtiyarpur	8	37886	19926	17960	8287	4274	4013	6852	5322	1530	18.08	26.7	8.51
	Salkhua	34	72604	38201	34403	16251	8380	7871	14472	10971	3501	19.93	28.71	10.17
Darbhanga	Kiratpur	9	53311	27529	25782	12367	6367	6000	14710	10645	4065	27.59	38.66	15.76
	Total	**380**	**987818**	**513132**	**474686**	**157226**	**80967**	**76259**	**267387**	**199059**	**68328**	**30.11**	**38.79**	**14.39**
	Bihar 2001											**47.53**	**60.32**	**33.57**
	India 2001											**65.38**	**75.85**	**54.16**

Source: Census Report 2001, Block Maps and Election Office Maps

It is a fact that education has collapsed in the state but it becomes very easy to find excuses for such unfortunate occurring within the embankments. The area that we are referring to here, located within the Kosi embankments, has a female literacy percentage of only 14.39. At the national level, this was the female literacy rate way back in 1951 and the same must have existed in Bihar in 1982. Female literacy levels in Marauna block of Supaul district and Simri-Bakhtiyarpur block of Saharsa district are less than 10 per cent. Male literacy levels are no different either. The male literacy percentage of 38.79 (2001) within the Kosi embankments existed at the national level in 1960 and in Bihar this figure may have existed around 1982. The overall literacy percentage of 30.11 (2001) within the Kosi embankments existed at the national level in 1963 and at the state level in 1984. This clearly signifies that those living within the Kosi embankments are 40 years behind rest of India and 20 years behind the rest of Bihar as far education is concerned. Bihar itself occupies the lowest position within the country in education.

The literacy level is a guide to the living standards of the people. Thus, if the people living here resolve today that they will remove the stigma of illiteracy from their midst, they will have to cover a forty-year backlog as far as the rest of India is concerned. It is also a fact that no concerns are shown anywhere, from the Panchayat level to Delhi or even Patna about the prevailing illiteracy. When education is in such shambles one can very easily imagine the state of other civic amenities here. If that is the average situation, the problems of the dalits and the other downtrodden communities of the area can only be much worse.

Sufferers' Stories

Ram Sagar, former Mukhiya of Belwara Panchayat in Simri-Bakhtiyarpur block says, "We were provided housing sites in Belwara Punarwas. Ninety percent of the people are now back in the original village because of waterlogging at the rehabilitation site. The government has since annually allocated this land to those who will do some farming. It does not belong to us anymore. The original village is exposed to the onslaughts of the floods and erosion. Our village has eroded 14 times in the past 42 years and each time we have built a new house. There is no option for us because our agricultural land is located inside the embankments. We move on to the eastern embankment during the rains and go back after the floods subside. Some families, who do not have any other place to go are settled permanently on the embankment itself."

Thus most people are compelled to get closer to their ancestral villages and fields but farther from basic civic amenities because they remain trapped within the two embankments. The block, sub-division and district collector's offices, are all located outside the embankments. Education, health services, legal aid, administrative facilities, banks, employment opportunities and so on, exist only outside the

Most Reliable Transport System in Flooded Areas

embankments. "The river used to flow in 16 known channels prior to embanking and to minimize the miseries of the people, the river was jacketed. But now the problems that once spread over a large area have become exclusive to those trapped within the Kosi embankments. … we need to pay the boatman Rs17 to go to the block headquarters at Mahishi and an equal amount is needed to come back. Those who live outside the embankments do not have to pay this penalty at least. It is also not possible to return the same day because of the distances and one must be prepared to spend a night outside. One should have some friends or relatives in the villages around to access facilities at the block headquarters. Reaching the sub-division or the district headquarters becomes a nightmare for us. Once in 1995-96 we offered *satyagrah* opposite the Collector's office in support of our demands and gave him a memorandum. The Collector called us and asked why it took us 40 long years to come out of hibernation. We had no answer to that question and came back home," says Bindeshwari Paswan of Pachbhinda village in Mahishi block of Saharsa district.

The Collector could ridicule the protesters for pleading their case after a lapse of 40 years but he himself forgot that the Government had been asleep for 30 years after constructing the embankments, when it constituted the Kosi Pirit Vikas Pradhikar (Kosi Sufferers Development Authority) in 1987. The embankment victims waited for 8-9 years to watch the non-performance of the Pradhikar and then came out in protest. Was this not wrong? The establishment decides our destiny for it obviously does not belong to us.

Kedar Mishra of Mahishi laments, "The Kosi belt is now a mini Chambal. One dare not go to the area within the embankments or to region west of the western embankment. We were promised that we would be compensated land for land, house for house, a link road to the embankment, a job to one person in every family and free boats. Where are these promises? Nobody knows where the people from Devan Ban or Bhakua have gone. There is nothing that has not been provided in the Kosi Pirit Vikas Pradhikar document but where is the Kosi Pirit Vikas Pradhikar and what does it do? Will somebody tell us its address? Mahishi police station is located at the rehabilitation site in Mahishi and that has been occupied by force. The villagers of Lilja were resettled in Jalle where one reaches only after crossing five streams. In 2004, massive silt deposition took place near Lilja because of the Kamla River and the village has emerged out of water. What will happen to it in the coming seasons, nobody knows. A single boat trip to the block headquarter of Mahishi costs Rs. 25/-. People naturally remain confined to their villages. The literacy rate within the embankments is less than 10 per cent and medical facilities there are non-existent. That is the rehabilitation we have received."

Actually, the plight of the people living west of the western embankment of the Kosi, in Mahishi block of Saharsa district, is worse than the people trapped between the Kosi embankments. These villages like Jalai, Manuar, Sankarthua, Ghonghepur, Pachbhinda, Samani, Garaul, Bhanthi, and Nawada, etc. suffer the wrath of the rivers because of drainage congestion between the Kamla and the Kosi. Waters of the Bagmati adds insult to injury in this zone. The plight of the people here cannot be believed without seeing the place. The situation in Biraul, Singhia, Kiratpur, Kusheshwar Asthan and Ghanshyampur blocks is no better.

8.5 Kosi Pirit Vikas Pradhikar (Kosi Sufferers Development Authority)

While most people returned to their villages, the ghost of rehabilitation, continued to haunt the area. T.P. Singh, while speaking at a meeting organized by the Kosi Samiti at Patna, on December 15, 1954 said that the government was well aware of its obligations towards those who would live between the proposed embankments and thereby face flood hazards of the Kosi and also those who are facing floods. It would neither dilute the demands made for compensation nor shirk its responsibilities towards the people.[25] Something similar was said by Bindeshwari Dubey, then Chief Minister of Bihar, at Ghoghardiha, on November 8, 1986.[26] This lack of concern of successive governments over a span of 32 years is mind-numbing.

Actually it was almost certain that the government could give a house in lieu of a house, but it was never possible to acquire land on that massive scale for cultivation. It was never given in writing that the government would provide land for land nor was it ever said in writing that it would provide a job to one person in a family in the Kosi Project, although every elderly person in the area asserts with confidence that some leader or a senior officer of the Project had given such assurances. Their list includes Jawahar Lal Nehru, Gulzari Lal Nanda, Lalit Narayan Mishra, T.P. Singh and Sachin Datta. Collector George Jacob of Darbhanga is often quoted in this regard that he had given these assurances in writing but the letters are missing. This may be due to time lapse or due to floods in the area when it is difficult to save documents. Assurances on economic rehabilitation of the embankment victims are, however, available. It seems, Dr Shrikrishna Sinha had surely some vision about rehabilitating the embankment victims. Staunch critics

of the government like Parmeshwar Kunwar and Baidya Nath Mehta used to compliment Dr Sinha for his efforts to resettle the embankment victims during the debates in the Bihar Vidhan Sabha. Krishna Ballabh Sahay, who was the Chief Minister of Bihar (October 1963 to March 1967), had once announced in the Bihar Vidhan Sabha (February 12,1966) that a 'C' type industrial set up would be opened in Mahishi which would benefit the embankment victims. A similar unit was to be established in Bihta in Shahabad district also implying that it was a routine development programme of the government and was not a special package for the Kosi Sufferers.

Committee Galore

The Government of Bihar had, in fact, constituted a committee in 1962 to plan and execute programmes on agriculture, health, revenue collection, extension and cooperatives. The Land Development Commissioner, Development Commissioner and the Chief Administrator of the River Valley Projects were the members of this committee. It proved to be ineffective. In 1967 another committee was constituted under the chairmanship of the Kosi Area Development Commissioner to prepare plans on agriculture, industry, cooperatives and economic rehabilitation of the embankment victims. This committee too repeated the non-performance of the earlier committee.

The government was not prepared to handle the rehabilitation issue in the Kosi Project and there was considerable indifference from the Kosi Project authorities on this issue. In 1966, Baidya Nath Mehta (MLA) narrated the callousness on rehabilitation in the Bihar Vidhan Sabha, "Has the government ever bothered to look into the grievances of the people trapped between the Kosi embankments, the people on whose dead bodies you erected the structures?...There are nearly 1.75 lakh people living within the Kosi embankments. For them it is a question of life and death and that question is placed before us now. Our minister makes no reference about their plight. Whenever the issue of those living within the embankments comes for discussions, he shuts his eyes. When the embankment was being built, I had raised the point of their well-being but the leaders within the state and those in the centre had assured that there would be no adverse impact on them." [27]

After a lot of persuasion the state government appointed a committee in 1981 to look into the possibilities of economic rehabilitation of the victims of the embankments under the Chairmanship of Chandra Kishore Pathak, then Chairman of the Saharsa District Board. This committee submitted its report in February 1982. It remained under active consideration of the government till January 1987 when it finally seemed to accept the report's recommendations. Bindeshwari Dubey might have considered accepting the report when he said that the government would do something for the victims.

The Chandra Kishore Pathak Committee elaborately discussed the possibilities of developing agriculture, animal husbandry, industry, public health, education, awareness building and land development within the Kosi embankments.

As far as agriculture was concerned, the report stated that the topography within the embankments was not stable and kept changing with time. It refrained from giving any general recommendation in such cases but split the area into four major blocks, i.e., the areas that remain free from floods, the areas that are submerged for about three months in a year, areas that are submerged for about six months in a year and the areas that remain under water round-the-year. The Committee recommended different and alternative cropping patterns for all the four categories so that (i) The crops could be harvested before the floods set in, (ii) paddy varieties that could tolerate prolonged submergence be promoted in permanently waterlogged areas and (iii) areas where irrigation was possible be provided with lift irrigation or bamboo borings.

Cattle rearing is a major livelihood source in the Kosi belt and there are immense possibilities for developing livestock. The report elaborated extensively on pig rearing, goatary, sheep rearing, and poultry farming. It emphasized the need for establishing artificial insemination and animal husbandry centers. Small scale industry and cottage industry found special mention in the report along with the development of fisheries. It touched upon issues of public health, education, social studies and awareness building in its recommendations.

It also suggested that in order to promote scientific farming, extension work, farm demonstration, development of financial sources like banks, etc. and formation of cooperatives, also be promoted.

The Pathak Committee recommended 15 per cent reservation in Class 3 and Class 4 services of the state government in the districts of Saharsa, Supaul, Madhepura, Araria, Purnea, Katihar, Darbhanga and Madhubani that were directly affected by the construction of the Kosi embankments.

The Government of Bihar accepted these recommendations at a meeting held on January 30, 1987. This long overdue gesture of the Government came after a lapse of about 30 years of completion of the Kosi embankments and passage of one generation while the population trapped between the embankments had risen from 1,92,000 to about 4,50,000. Though late, the gesture was certainly a welcome one.

Following these recommendations, the government

Life on the Embankment

constituted a Kosi Pirit Vikas Pradhikar on April 14, 1987 and appointed a 19-member committee, under the chairmanship of Lahtan Chaudhary, to look after the affairs of the Pradhikar. Lahtan Chaudhary had once said about the embankment victims, "They had dug their own graves with a hope that the government would extricate them from the grave but it is painful to note that there is nobody to shed tears for them."[28] Chief Minister Bindeshwari Dubey, in a message about the Pradhikar said, "Lakhs of people have suffered untold miseries since the construction of the Kosi embankments. There can hardly be a place in any part of the country where so many people are exposed to the currents of the river. Chased by their misfortunes, these people had lost all hopes…. The government is determined for the overall development of these sufferers and an authority has been constituted. It aims to bring happiness to these people once again."[29] That is the sum total of developments 32 years after work on the project began.

But this Pradhikar is a defunct body and it is of no use to the embankment victims. Twenty years have passed since the Bihar Government accepted the proposal for an institution that would ameliorate the problems of the Kosi sufferers. There may be a Chairman of the Pradhikar enjoying privileges of a cabinet minister and other members who might meet occasionally at public expense, but the embankment victims remain where they were some 50 years ago. It has no building or an office of its own, no vehicles, no permanent staff and no budget that it could call its own. For all practical purposes, it can call itself an advisory body that suggests what other departments can do to help the people living within the Kosi embankments. Whether that advice is taken at all by anybody is altogether a different matter. It has a base in the Vikas Bhawan at Saharsa with nobody to represent and it is really very hard to find where the Pradhikar is located. Most of the Government officers in Saharsa, where the Pradhikar is located, do not know that such a body exists.

It had taken decisions, way back in 1989, to do away with the 'ghat system' on the banks of the Kosi and provide free ferrying facilities to those living inside the embankments. But it could not get even this done. It wrote to the Relief and Rehabilitation Department to ply free boats during the flood season but without any success. It wanted to construct a road from Baluaha Ghat to Baghwa village and Bheja to Bakaur with the provision of a pontoon bridge. That is still in the proposal stage. The Pradhikar, which has not even got its own building till now, wants the schools within the embankments to have their own buildings — when most of the schools do not even have a roof. Health services do not function. There was a provision for 15 per cent reservation in Class 3 and Class 4 jobs in the Bihar government for these people and it did not cost anything to implement. Nothing has been done so far. People on deputation from other departments staff the Pradhikar and it is reported that most of them are not the Kosi victims.

There are no colleges, no banks, no cinema halls, no roads, no electricity, no hospitals and nothing that can be linked to modern living. Should one need to shoot a film of the days of, say, the Maurya or the Gupta dynasties, one can shoot it without much preparation there.

Rehabilitation and Pradhikar have become a political issue now. In every election, politicians promise that if they are voted into power, they will revive the Pradhikar. Elections have been held after the Pradhikar was constituted and many people have won elections from there. Many of them were part of the ruling party but nothing improved. People also say that unless the Pradhikar is revived, their fate is sealed. The Pradhikar, however, is a case of still birth and hence the question of its revival is moot.

Says Ram Prasad Roshan of Telwa village in Mahishi block, 'We were given rehabilitateion sites in Jalle, which was four kilometers west of the western embankment. My village was 1.5 kilometer inside the embankment. The Kosi embankment terminated at Ghonghepur and the backwaters of the Kosi used to hit Jalle. We demanded protection from the waters of the Kosi and the project constructed a T-spur to prevent the back-flow of the Kosi. The spur did the job but it

also prevented the Balan waters from emptying into the Kosi. Thus we were saved from the Kosi but got drowned in the Balan waters. We then shifted from Jalle on to the western Kosi embankment at 49.5 km with all our families and cattle. Living permanently on the embankment was difficult and we were forced to move back to our original village. Nobody lives in Jalle now. There were 10hectares of rehabilitation land in Jalle and 35 hectares in Saharawa where people from Chhora, Jhakhara, Jhara, Karahara, Sugaroul, Lachhminia, and Majarahi had settled. They have all gone back to their respective villages…We are living in primitive conditions, which must be seen to be believed. Kosi Pirit Vikas Pradhikar was started at our behest but we do not know what it does and where it is located. This is all a farce."

Rehabilitation in the Kosi project was just a formality and the entire episode was grossly mismanaged. (See Box: No Rules or Regulations)

Dr. Abdul Ghafoor (MLA), until recently the Chairman of the Kosi Pirit Vikas Pradhikar, had his own set of problems. Theoretically he was a powerful person enjoying the privileges of a cabinet rank minister, but was not in a position to deliver results. (See Box: An Embankment Victim First and the Chairman of the Pradhikar Later, page 146)

No Rules or Regulations

"My village Bela Goth was located within the Kosi embankments at *Thana* No: 142, Kishanpur Block of Supaul district. We were five brothers and our house was built over an area of 36 decimals. All that is lost to the Kosi embankments. We were given a rehabilitation site in Mahua where the government had acquired 21 acres of land. Of this, 14 acres was meant for the people of Bela Goth and its plotting was done in 1959. Apart from the housing requirements, another 40 per cent land was acquired for services like roads, tanks, playgrounds, cremation grounds and a grave yard, etc. Other than Bela Goth, the villages of Suratipatti, Begamganj, and Pachgachhia were also given rehabilitation sites there. The land that was given to us in Mahua was too small for us to settle on and we surrendered that piece of land. It was not possible to build a house on 2 or 3 decimals of land. I was employed with the Rehabilitation Office and I managed to get the land allotted to us in Mahua to here in Kharail Malhad where I am now settled. I could manage this because I knew which land was vacant and where, because of my position in the office. This land is allotted in my name.

I had some experience of working in the Rehabilitation Office of Chhota Nagpur. It was customary there to assume a family size of 5. Every family was entitled for a piece of 25 decimals of land and every married person was treated as a separate unit. I wrote about all that to the Supaul Rehabilitation Office but that was ignored.

There were 304 villages to be rehabilitated in the Kosi project. For this, 54 rehabilitation sites were acquired west of the western Kosi embankment and 74 locations were acquired east of the eastern Kosi embankment. Some 111.78 acres were acquired here in Kharail Malhad where people from Khokhnaha, Sukaila, Bela Parasbanni, Balwa, Karnapatti and Fakirana were to be resettled. But, there must be people from at least 18 or 20 villages living here. Some of them may be authorized and there may be many who are unauthorized. It is very difficult to ascertain which displaced village is relocated at which resettlement site. Who will confess that he is living here in an unauthorized way as his own rehabilitation plot is located in some other village. There was no acquisition of rehabilitation sites for Ghivak, Ghuran, Nirmali, Sukumarpur, Dighia, Dubiahi and Mainaha. Most of the residents of these villages are living in their ancestral villages. Some of them may be living on the embankments. It is also possible that they may be living in some other village or rehabilitation site.

We got compensation for the land over which the embankment was built. We were compensated for the standing crop on our land and wherever land was acquired for constructing a canal, we were paid for it. Be it a pittance, but we got compensated for the trees that were standing on our land. If all this is right, why on earth, were we not compensated for the land or given land in lieu of that which got trapped within the embankments? We are fighting for our legitimate rights through the Kosi Mukti Sangharsh Samiti and will continue our struggle till the time we get justice. Our biggest handicap is that those who could have helped us in our struggle, our able bodied youth, have all migrated to distant places throughout the country in search of employment."

— Narrated by Ramesh Chandra Jha
Ward No:1 Kosi Punarwas, Supaul:

An Embankment Victim First and the Chairman of the Pradhikar Later

"According to the original design, the eastern embankment had to pass through Dhemura Dhar in the east, near Bangaon, and the western embankment was to be constructed up to Jhamta. So much was the distance between the two embankments and see what is constructed? In the east, Mahishi is out of the eastern embankment and Ghonghepur and Bhanthi, are both outside the western embankment. There was 18kilometers of designed spacing between the two, but the actual distance is just 8 kilometers. In this situation, those who are living within the embankments are destined to doom. This was known since the time of construction of the embankments. Then started the cover-up operation and tall promises were made — house for house, land for land, a job for one person per family, arrangement of boats, a plot measuring 2 to 5 decimals at a rehabilitation site, etc. That marked the beginning of the problems.

Whosoever designed the rehabilitation package, did not know that life in towns and villages differ. I can live on a plot of five decimals but who will tell the chickens and ducks not to stray? Where will my goats and cows go for grazing? Where will we go for defecation? The fields are 7 to 8 km away from our homes. One has to go to the fields every day with bullocks and plough and then return in the evening. Women and children normally carry food to the fields. They also travel the same distance everyday. Then the rehabilitation sites got waterlogged and ninety percent of the families returned to the original village. That was the end of rehabilitation. The government auctions the rehabilitation sites for farming, on an annual basis and keeps the money with it. It turned into a *zamindar* after people vacated the rehabilitation sites. Brokers have also come up in these deals. They bid for the land every year and sub-let the same to others.

I am the third Chairman of the Kosi Pirit Vikas Pradhikar. Lahtan Chaudhary was the first and I succeeded Vinayak Prasad Yadav. No work was done in anybody's tenure. The Authority does not get any money from anywhere. Lahtan Chaudhary could just publish a booklet about the Pradhikar, which you might have seen and that was all the expenditure incurred by the Pradhikar so far. No work was done during the tenure of Vinayak Babu nor is done in mine. Shankar Prasad Tekriwal, former finance minister of the state, hailed from Saharsa and had sanctioned Rs. 5 crores for the Pradhikar but the process of transfer of money to any department is so tedious in this state that the money did not come to the Pradhikar account. That was the end of sanctioning money to Pradhikar. It was neither received then, nor will we receive any more in the future.

The problem of the Kosi and its embankments was unique at one stage, but now embankments are built on all the rivers and people live within those embankments. They suffer the same kind of hardships there as we do here and the Kosi no more enjoys the distinguished position it once did. If you have money to spend, why should that be spent on the Kosi alone when there are so many people suffering the same fate elsewhere? What mistake have the people living within the embankments of the Gandak, Burhi Gandak, Bagmati, Kamla, or the Mahananda, committed that they will not get any priority? If any money is spent on the Kosi now, there will be turmoil within the government. There was some hope earlier but now, there is no money to do anything. Who bothers about the victims then and what is the Pradhikar for?

Eighty Panchayats are located within the Kosi embankments, from Birpur to Kopadia. This is a very densely populated area and even if there are 10,000 people per Panchayat, the population within the embankments may not be less than 8,00,000. Go and have a look at their living conditions. They pray to God for death but that is not in any body's hands. One needs a boat to go from one house to the other, one needs it for offering *puja* or *namaz.* Boats are also needed for answering nature's call. Come sometimes during the rainy season and see for yourself how we survive.

There is no solution to the problems faced by the sufferers of the Kosi embankments except that the embankment be done away with. If the river does it, it will be very good otherwise the people will rise one day and demolish the embankment. This is what the people are resorting to in the case of the other rivers where they cut the embankments during the flood season. I am saying this with full responsibility and despite being the Chairman of the Kosi Pirit Vikas Pradhikar. I am an embankment victim first and the Chairman of the Pradhikar later. The Kosi embankments are our problem and this alone is the solution of our problems."

— Narrated by Dr. Abdul Ghafoor
Vill. & PO.Bhelahi via Mahishi, Dist. Saharsa.

8.6 Nepal has 34 Villages Entrapped within the Kosi Embankments

The Kosi embankments not only trap Indian villages but 12 Nepali villages south of the Kosi barrage and 22 villages north of the Kosi barrage that fall within them. Says Dev Narayan Yadav of Rampura village in Saptari district in Nepal, "The land over which the Kosi was flowing those days and the land that was acquired for rehabilitation was compensated for. For example, Lilja village had a total of 1430 bighas of land and the Kosi project acquired 317 bighas of that land. The balance land remained with the owners. When the barrage and the embankments were completed and water was released from the barrage then erosion set in, upstream as well as downstream of the barrage. The river started shifting its course within the embankment and nearly 1113 bighas in Lilja were eroded. No compensation was paid to us for such losses. This erosion has now extended to 61 villages in Nepal.

"South of the barrage, 3185 bighas of our land are under submergence and 7093 bighas are submerged upstream of the barrage bringing the total to 10,278 bighas. This was paid for by the government. Some 1100 bighas of land was given to India on goodwill, at some reduced rates. Thus, we were paid for land measuring 11,378 bighas. But our land is much more and the river continues to meander at will on this land. Somebody must take care of us in that case since we are facing all these problems because of the construction of the embankments and the barrage on the Kosi, which was constructed mainly to protect the areas affected by floods in the river in India. Even if we ignore the money part of it, the situation in the rehabilitation sites is not good. Narha village was rehabilitated in Bhantabari where nobody shifted from Narha because there was no source of livelihood there.

Dev Narayan Yadav

The rehabilitation site at Dalwa is waterlogged and is unfit for human settlement. How can one live there?"

While there is so much resentment over rehabilitation in Nepal, the Indian counterparts are no less unhappy. Says Yuvraj, "(For) the land that was acquired in Nepal, a price of eleven hundred rupees per acre was paid to them but the same land was purchased for Rs. 250 to 300 here." [30] Actually, the rehabilitation scenario in the Kosi project in Nepal is in no way different than that of the Indian scene. The only difference is that if there is any resentment over there regarding rehabilitation, it can be indicated to India through Kathmandu only. Direct dialogue or direct expression of dissent is not possible. This is also true for the villages on the Indian side. The resentment of the villagers turns into anger, sometimes. We have seen a glimpse of it in the case of the Joginia breach in 1991.

8.7 Administration, Politics and Non-Governmental Organizations

The district administration at times refuses to provide relief to the flood victims within the embankments on the plea that the people residing there have been given rehabilitation sites and that they are living in places where they should not be living. The administration would surely have given them relief if they had stayed back at the rehabilitation sites even though they were waterlogged. That the rehabilitation sites are waterlogged and the floods within the embankments know no bounds does not concern these administrators.

There was an interesting debate in the Bihar Vidhan Sabha about the plight of those trapped within the embankments. Vinayak Prasad Yadav (MLA) pointed out that the condition of Bela, Singar Moti and Dhobiahi villages had become precarious because the Kosi was on the verge of eroding them. He wanted to know the government's plans to protect these villages. Rameshwar Prasad Singh replied on behalf of the Government of Bihar saying, "These villages are located within the Kosi embankments and Bela Dhar is a stream of the Kosi. When water comes in that stream, the villages are threatened with erosion but it is not the job of the government to protect such villages. The villagers have been paid compensation and they should vacate the place. The land within the embankment is meant for agriculture and not for dwelling purposes. The government does not spend money for protecting the villages."[31] This was a policy statement of the Government to which it still confirms. This means that the government exonerates itself of any obligation to the people living within the embankments of any river. It is impossible to tell the river that the people have been compensated for their

houses and the river could erode them but the land has not been compensated for and hence the river should spare the land. If the embankments are secure, then life within them becomes insecure because of the rising flood levels. But the Water Resources Department views it as a sacred duty to keep the embankments intact. How far is this mission achieved is anybody's guess.

The Water Resources Department is also unhappy that people throng on to the embankments themselves during the flood season and many of them have made the embankments their permanent abode. This makes movement of vehicular traffic and maintenance of the embankments difficult. Embankments breach for want of proper maintenance and their repair becomes even more difficult when the people camp on them. The government issues notice to the embankment dwellers but they do not vacate it. The engineers believe that there is lack of political will for vacating the embankments. Most of the people who live on the embankments are from the weaker sections of the society and are very useful to politicians. The government and political parties do not want to rub shoulders with them because they not only occupy the embankment's space but are voters also and this every political party understands. If they are dislodged during the regime of one party, the other parties will make political capital out of it. No one wants to run that risk. From Civil Sub Divisional Officer to the Commissioner, everybody has got a list of the embankment dwellers but no action is taken against these 'illegal occupants'. There was a deadline to get the embankments vacated by December 2002 but no action was taken at the field level. Internally, even the engineers do not want the embankments to be vacated and they do not want to use any force in eviction. The simple reason is that it is the engineers, from a Junior Engineer to Chief Engineer, who have to visit the embankments and that too without any protection or judicial powers. All the anger of the masses against the administration has to be faced by them alone.

In 1997-98, the district administration of Madhubani once tried to evict the 'illegal occupation' of the Kamla and the Kosi embankments. But neither the administration was concerned nor the hapless victims of police atrocities were aware where they could go after being chased by the administration. The latter had its orders to be complied with but those camping on the embankment were already chased by calamities — erosion of village land, waterlogging of the villages or surges of river water due to a breach in the embankment, etc. — before they decided to live there. Not a single family was residing on the embankments for fun or for a picnic. None of them enjoyed living at a place that was surrounded by water on all sides with only one escape route and that was the embankment itself. They were there with a feeling of insecurity and the grief of losing their home and hearth. This is especially true for the *doab* of the Kosi and the Kamla. Ignoring all these reasons and exercising its brutal power, the government evicted the people from the embankments. Many of these victims may have voted the same government to power to look after their well-being.

It is a necessary that the crest of the embankments be clear of any obstruction to the movement of vehicles but it is no less necessary that the administration should tell the people where they can reside safely. In most cases, if the people are forced to occupy the embankments, the government alone is to blame for it and it should not behave like an ostrich. When the people were chased away from the embankments in Madhubani district they had no other place to live, at the peak of rainy season. Land prices sky-rocketed overnight and most of the families were compelled to live on the alleys of fields as that was the only common land available to them.

These issues concerning the people living within the embankments are not on the agenda of any political party. The responsibility of a good number of NGOs working in those areas ends with providing some relief to the flood victims. The issue of floods and waterlogging is a matter of concern to them but looking for a permanent solution to the problems of the people is something that they are not interested in. Their role is limited to raising funds for relief operations, holding seminars and conferences on environmental degradation, livelihoods and the so-called right's approach. They close their eyes to the systematic cheating of the people, breach of trust, betrayal by the administrative, political and technical machinery of the state and chant the disaster mantra starting with preparedness, mitigation and ending with long-term rehabilitation. They also recite catchy phrases like equitable relief, empowerment and 'living with floods', etc. in the same fashion as students in the village primary schools recite their tables before their teachers. The teacher derives satisfaction that the students remember the tables and the students' morale remains high that the teacher is happy. Running away from the real issues is their inherent compulsion for survival.

8.8 People's Viewpoints

Ram Chandra Khan of Musaharia village, in Darbhanga — and a former Inspector General of Police — laments, "What sort of science is this which doesn't care about the results? Instead of solving a problem, it transports it elsewhere. Why does science not take cognizance of the local culture? If people in deserts have a lifestyle of their own, the same values cannot be thrust upon

Ram Chandra Khan

the people in the flooded areas. We used to wait for the floods every year. All our agricultural operations were linked to floods. We had paddy varieties to suit every depth of flooding and stagnation of water. Fresh silt and fresh water used to rejuvenate our fields leading to bumper crops. Fish were in abundance. Communication used to remain undisturbed with the help of boats. The beating of drums during Durga Puja was an announcement of the end of the flood season.

Because of misuse of science, we have lost all our rivers, fields, agriculture, flora and fauna, habitat, temples and mosques and culture because of these embankments. Water remains here for eight months and floods enter our villages before the land has dried after the last flood. What sort of science or engineering is this? The Kosi used to flow in its various channels, the flood levels were low, and we had our traditional variety of paddy that used to grow in this area. The waters of the Kosi and the Kamla used to mix with each other to make the land very fertile…Floods stay now virtually round-the-year…If we ask for rehabilitation now, the government cannot concede the demand. Once it proposed to give economic rehabilitation to the embankment victims but it could not deliver. Can it drain the water out from here at least, so that we can demand roads, schools, health services, market places, banks and other civic amenities here that the people elsewhere demand from their leaders. We are not in a position to demand even that because of the stagnating pool that has been created here. We have lost everything and the only solution to our problem is the return of our rivers back to us lock, stock and barrel and in their pristine glory… I would not like to demolish the embankments or settle for the Barahkshetra Dam. I want my rivers back."

The situation is best summed up by Dina Nath Patel of Kabira Dhap (in Saharsa district), "You are asking me what I will ask if God appeared before me. Don't you see that my village is getting eroded right before our eyes? And do you think God never came to us. He did so many times. Anybody, who comes here, poses like God. He systematically cheats us and then disappears. You may also be one of them. The best we can do is to tell the God to prove his credentials first."

Parmeshwar Kunwar

Says Parmeshwar Kunwar, "I was arrested for showing a black flag to Dr Rajendra Prasad when he came to Saharsa to lay the foundation stone of the eastern Kosi embankment in 1955. Rajendra Babu knew me and when he came to know of the incident, he asked the authorities to release me. Kumar Kaushalendra Singh prepared a detailed report about the people trapped within the Kosi embankments and we raised our voices on their behalf. I had all these papers with me till the emergency but the police confiscated my library and never returned it back to me. We had prepared a memorandum of 20 pages and given it to Dr. Shrikrishna Sinha, the Chief Minister of Bihar. The reply came from T.P. Singh. We gathered some 15 to 20 thousand people and demonstrated here in Saharsa. Suraj Narayan Singh, Basawan Singh, Ramanand Tiwari, Karpoori Thakur and Bahadur Khan Sharma sat on *dharna* many a times demanding rehabilitation for the embankment victims… but you cannot fight a determined state, which has all the powers to crush a movement. I am now an old man and don't have that energy in me...but still feel that the embankment should be demolished in the dry season and let the Kosi go to Purnea, if it so wishes. The river will do that sometimes on its own in the future anyway."

8.9 The Struggle Continues

Earlier leaders like Baidya Nath Mehta, Janaki Nandan Singh, Bauku Mahato, Kunwar Kaushalendra Narayan Singh, Khushi Lal Kamat, Jaidev Salhaita, Bahadur Khan Sharma and Parmeshwar Kunwar are no more with us but the struggle continues. The contribution of Shivanand Bhai after the embankment breach at Navhatta in 1984 was quite significant (See Chapter 4).

In the new generation, Advocate Dev Kumar Singh of Kosi Mukti Sangharsh Samiti (KMSS), Supaul district has taken the wand from the elders and sustained the voice of the embankment victims over the past 15 years. He has raised the issue before the Chief Secretary of the state to the President of the

Advocate Dev Kumar Singh

country. When nothing worked, he wrote to the National Human Rights Commission (NHRC) on May 30, 1998 with a request to intervene. KMSS placed its 15-points demand before the NHRC and sought compensation for the loss of all the crops till then on the land within the embankments. It demanded the resumption of train services between Nirmali and Bhaptiahi besides construction of the proposed high dam on the Kosi at Barahkshetra in Nepal.

KMSS also demanded fulfillment of the provisions of the Kosi Pirit Vikas Pradhikar, reservation in the state services for embankment victims, their rehabilitation and construction of *pucca* houses for them in protected areas, remission of all kinds of cess upon them, an enquiry into fake appointments in the name of embankment victims, reservation for students in ITIs, vacation of illegal encroachment of rehabilitation sites, surveys of land within the embankments for ownership and establishment of big industries in the area to create employment for the Kosi sufferers.

NHRC, through its letter No. 2294/4/97-98 dated August 12, 1998 asked the Chief Secretary of Bihar about the status of these demands. When there was no reply from the Government of Bihar, the NHRC once again wrote to it on March 22, 1999 to explain its position over the issue. The GoB replied on October 11, 2001 to clarify its stand. It said, "The people who lived between the embankments have been rehabilitated as per the provisions of the Rehabilitation Scheme 1957. Following the rains and after the flood season, agriculture, fisheries and other economic activities became very lucrative and then the rehabilitated persons, at their own will, stay within or outside of the embankments and make use of their land and enjoy other economic benefits within the embankments." The Rehabilitation Scheme of 1957 is the same plan of Rs. 2.12cr that was discussed in Section 8.2 of this chapter. About the Barahkshetra Dam, the GoB informs the NHRC in the same letter that, "There will be progress in the direction of construction of this dam only after an agreement is reached between India and Nepal. The flow of the river will be stabilized fully after the construction of this dam and deposition of silt will not create any problem then."

The GoB also suggested in the letter that, "(of) the said (rehabilitation) plan, 136 rehabilitation sites have been developed and a sum of Rs. 1.17cr has been spent on grants for house construction. A sum of Rs. 1.10cr have been spent on the development of civic amenities. Thus, the Project has spent more than what was provided for and has rehabilitated 39,527 families." The report further adds that the affected families use the rehabilitation sites as an alternative dwelling during the flood season. They are not prepared to leave their ancestral homes and that is the reason that about 1400 acres of land are lying vacant at the rehabilitation sites. These vacant sites are auctioned annually so that they (affected persons) are benefited the most. Many people keep shuttling between their houses in the original villages and the ones in the rehabilitation sites, which, gives outsiders an opportunity to encroach upon their lands at the rehabilitation sites. The government assured that such illegal encroachers were being identified and they would be compelled to vacate the sites. The district administration was put on the job, the report said. The government had initiated enquiries against 81 persons who were suspected of getting jobs on false pretexts and 31 of them were removed from their jobs.

Regarding the other demands of the KMSS, the Water Resources Department (WRD) wrote that they did not concern their department and hence it was not in a position to respond to them. The issue is that the NHRC had asked an explanation from the Chief Secretary of the state and not the WRD. It was the responsibility of the Chief Secretary to seek replies from all the concerned departments and write back to the NHRC. That never happened.

A list of the villages where rehabilitation sites were acquired by the Kosi Project and rehabilitation provided to embankment victims is given in Table 8.2. WRD has given a list of 136 such villages to NHRC but the list of rehabilitated villages is missing. It has also not mentioned which village has been rehabilitated where. According to Ramesh Chandra Jha no such list is available because no such record has been kept in the Rehabilitation Office. The rehabilitation office at Supaul has released a list of its Amins who look after the rehabilitation sites and according to that list the number of rehabilitation sites is 134. Of this, 60 locations lie east of the eastern embankment and the remaining 74 are on the west of the western embankment. About 1400 acres (570ha) are officially stated to be vacant, while 1200ha (3000 acres) were actually acquired for the rehabilitation sites. This means, according to the Government's own confession that nearly half of the rehabilitation sites are lying vacant. There are 110 villages with some vacant land (58 are west of the western embankment and 52 are east of the eastern embankment). In the list of the rehabilitation sites, Nakuch village is listed as Nakuch

(Col.2) but in Table 8.2 where vacant lands are shown, there are two sites as Nakuch A and Nakuch B. If we treat them as one, then partially vacant rehabilitation sites (Col.4) reduce to 109. If the information given by the Rehabilitation Department (Col.2 & 3) and the list submitted by WRD to NHRC (Col.4) are correct, then there are 25 rehabilitation site about which nothing has been said. This prompts one to think that there are at least 25 locations that are fully occupied. These 25 locations are starred in Table 8.2.

Table 8.2 Details of Locations where Kosi Embankment Victims were Rehabilitated

S. No.	Rehabilitation Sites	Total Land Aquaired for Rehabilitation. Ha	Vacant Land in Rehabilitation Sites. Ha
1	Bhimnagar*	3.39	_
2	Saheban	9.51	0.4
3	Piparahi Baijnathpur	8.14	2.43
4	Baijnathpur	0.93	0.3
5	Basawan Patti	12.47	3.04
6	Piprahi Goth/ Lalman Patti	2.88	1.42
7	Narpat Patti/ Satan Patti	7.37	2.43
8	Narpat Patti/ Gopalpur	5.8	2.43
9	Korhali Gopalpur	8.55	0.4
10	Nonpar	13.36	2.43
11	Sadanand Pur/ Kalyan Pur	7.78	1.62
12	Bisanpur/Bhaptiahi	10.4	3.24
13	Pipra Khurd/ Bhaptiahi	8.5	1.21
14	Chandpipar North*	4.6	_
15	Chandpipar South*	7.95	
16	Malarh	15.14	7.29
17	Tharbitta East	15.35	10.47
18	Tharbitta Colony	7.59	3.59
19	Kishanpur	12.67	7.29
20	Abhuar Khakhai	8.7	1.16
21	Dabhari*	4	_
22	Mahua*	8.43	_
23	Bairia Manch	5.69	2.67
24	Kharail Malhad	45.26	0.58
25	Kharail Parsa Karnapur	37	5.9
26	Pipra Khurd	7.3	0.61
27	Parsa	6.03	3.88
28	Simra Malhani	7.22	1.42
29	Lalchand Patti/ Lalman Patti	4.94	3.55
30	Nemua Rampur*	8.58	_
31	Basbitti	4.89	0.53
32	Dumaria	19.64	1.21
33	Barahi Bijalpur	38.89	19.43
34	Dumra	16.04	2.43
35	Dharmaput Trikhutti/ Chaukhutti	14.79	8.91
36	Dharpur / Trikhutti	18.85	4.86
37	Navhatta / Hempur	19.35	6.07
38	Navhatta / Navlakhkha	6.68	5.05
39	Navhatta / Sahpur	12.47	0.95
40	Kumharauli*	10.19	_
41	Mohanpur*	15.25	_
42	Auria Ramauti	4.94	3.24
43	Enaetpur	5.07	0.81
44	Chandrain	41.31	16.19
45	Khiraho Teghara	7.34	2.43
46	Mahishi Uttarwari	9.85	3.64
47	Mahishi Tilabhag*	2.58	_
48	Mahishi Jamunbari	13.37	3.64
49	Mahishi Mahpura	1.82	1.62
50	Gamaraho	12.91	7.29
51	Nakuch A & B	7.64	4.45
52	Tilathi	11.28	11.28
53	Sataras	29.04	9.31
54	Kathghara	12.67	2.43
55	Gordah	16.45	12.51
56	Bhelwa	8.18	6.88
57	Utesara Inside	1.72	1.72
58	Salkhua Situahi	5.43	4.26
59	Salkhua	8.95	7.84
60	Utesara Outer	13.81	6.07
61	Kunauli North	1.83	1.38
62	Kunauli South	6.3	1.78
63	Haripur	2.46	0.87
64	Haripur Kamalpur	10	1.57
65	Kamalpur	3.04	1.34
66	Jiroga Mahadeomath	6.33	6.19
67	Jiroga B	3.7	3.48
68	Kulaharia	4.21	3.64
69	Dharhara A*	1.85	_
70	Dharhara B*	8.9	_
71	Dagmara*	12.38	_
72	Mathahi	3.98	3.74
73	Mahadeomath Belhi Gidarahi	2.01	0.61

74	Baruar Rajaram Patti	4.89	4.86
75	Nemua Baruar	8.72	7.1
76	Auraha Mahdeva	8.03	6.52
77	Jiroga Narendrapur	9.9	7.94
78	Chhajna Baluaha	4.89	1.01
79	Chhajna Jhitki	2.87	2.24
80	Chhajna Lachhminia	2.31	1.62
81	Nirmali Lachhminia*	9.45	_
82	Belhi Poola	2.24	2.06
83	Belhi Parsa	11.1	4.35
84	Belha Brahmapur	10.54	8.1
85	Inarwa*	2.79	_
86	Rajuahi Pirojgarh	21.6	16.76
87	Mataras	10.22	0.57
88	Biraul	2.08	2.08
89	Pauni Chapram	19.8	11.54
90	Az Rakbe Pauni	4.95	4.85
91	Marauna Agargarha North	12.47	5.92
92	Marauna Agargarha South	_	5.04
93	Marauna Sarauni North	11.58	9.28
94	Maruna Sarauni South	5.92	4.45
95	Bangama Piparahi	11.22	4.05
96	Kalikapur	4.68	4.54
97	Deorh*	1.02	_
98	Tardiha Bochahi	2.99	0.81
99	Sarauni North	9.08	8.1
100	Sarauni South	9.22	9.09
101	Bhumpur	9.17	8.1
102	Nawada	5.42	5.36
103	Bhakharain*	7.6	_
104	Bhakharain Ratuar Rahua	14.51[1]	21.01
105	Kharik Madhu Sangram	4.74	4.46
106	Bheja*	0.73	_
107	Jhagarua North	6.74	3.31
108	Tarwara Kubaul	5.3	3.25
109	Balthi Khajuri Parsauni	22.13	17
110	Rasiyari Parwalpur	6.1	5.83
111	Rasiyari Kalyan*	4.42	_
112	Rasiyari Bakunia	8.2	2.02
113	Jhagarua South	14.4	8.12
114	Tetari East*	1.59	_
115	Tetari Middle*	0.98	_
116	Tetari West Danka	2.44	2.44
117	Tetari Jakso Bhubaul	18.4	14.68
118	Bhubaul*	_	_
119	Jamalpur North	6.05	2.45
120	Jamalpur South	9.92	5.5
121	Akhatwara North	4.65	3.85
122	Akhatwara South	4.2	2.83
123	Amahi Khaisa*	2.83	_
124	Amahi North*	4.24	_
125	Amahi South	3.07	3.07
126	Bahrampur	8.7	6.48
127	Punach Gandaul	12.06	8.82
128	Mallai Garaul Baghawa	2.39	2.39
129	Jallai East	12.34	8.5
130	Jallai Middle	4.08	1.55
131	Jallai West	36.85	23.77
132	Tarwara*	0.68	_
133	Brahmapur*	3.36	_
134	Ghonghepur Saharawa	25.37	21.18
Total (Approx.)		**1229.67[2]**	**554.29**

Source: (i) Col.2 and 3, Rehabilitation Department of the Kosi Project, Supaul.

(ii) Col.4 is adapted from the information given to NHRC by WRD.

(iii) Where no information is furnished about the vacant land at the rehabilitation site, it is assumed that such sites are fully occupied.

1. This area should be more than 21.01ha.

2. Due to discrepancies in the areas of the rehabilitation sites, 'approximate' is used.

According to this table there is no vacant land at the rehabilitation sites of Bhimnagar, Chandpipar North, Chandpipar South, Dabhari, Mahua, Nemua Rampur, Kamharauli, Mohanpur and Mahishi Tilabhag. This implies that all those who were resettled at these locations should be there. One such rehabilitation site is in Mohanpur village, which is located on either side of the road linking Mahishi to Navhatta. Two hamlets of Garhia Kundah revenue village, namely Fakirahi and Parasbanna, and two hamlets of revenue village Mohammadpur, namely Misiraulia and Mohammadpur, were rehabilitated at these locations. The river started eroding these villages immediately after the embankment was completed in 1957. For 2 or 3 years, they made some make-shift arrangement within the embankments but were compelled to shift to the rehabilitation site in 1960.

The plot for Misiraulia was at the highest elevation in the rehabilitation site and its residents were the first to come there. The plots for Fakirahi and Parasbanna

were to the middle and the lowest land fell in Mohammadpur. It was also a strange coincidence that the land of Mohammadpur, within the embankments, was eroded last and they had to move from there but by that time, there was waist deep water at the rehabilitation plots allotted to them. They decided to shift to the eastern embankment and continue to be there in 2008.

Only a part of the population in Fakirahi, Parasbanna and Misiraulia resides at the rehabilitation site. Hafiz Ainul Haq of Fakirahi says, "Only those who are thoroughly mauled by the circumstances remain here at the rehabilitation site. We became paupers because of this embankment. Our land within the embankment was either consumed by the river or is covered under a thick bed of sand. There is not a single person in Mohanpur who still possesses even 10 katthas of land. Our rehabilitation site is shown on the survey map but within that the location of our plots is not shown. We do not have any papers of the land yet. Whatever land one has occupied, it belongs to him. Our names are there in the *khatiyan* of the Rehabilitation Office in Supaul and that is all. Thus this rehabilitation is temporary. The Rehabilitation Office is also temporary, that everybody knows. We do not know how many of our fellow villagers have gone from here and at the same time there is no count of how many outsiders came and settled on this land. Despite that, no villager here is designated as being below the poverty line (BPL) but those having tractors and motor cycles are there in the list….There was one Basudev Mehta from Kedli Punarwas, where the embankment had breached in 1984, who wanted to contest the rehabilitation issue in the Supreme Court of India. He had appointed an advocate also but the advocate told him that it would cost, at least, Rs 80,000 to contest the case. We are poor people. Where could we get this money from? This also happened long back and it is a long time since Mehta died. If you still say that Mohanpur is fully occupied by persons displaced by the embankments, what can I say?"

Similarly, there are 16 locations west of the western Kosi embankment where no land is reported to be vacant. These sites are Dharhara A, Dharhara B, Dagmara, Nirmali Lachhminia, Inarwa, Deorh, Bhakhrain, Bheja, Rasiyari Kalyan, Tetari East, Tetari Middle, Bhubaul, Amahi Khaisa, Amahi North, Tarwara, and Brahmapur. A visit to Inarwa in Ghoghardiha block and Nirmali Lachhminia in Nirmali block is revealing.

The villagers in Inarwa say that some 2.79ha (6.85 acres) of land were acquired in Inarwa to rehabilitate displaced persons from Basuari, Harri and Baskhora. There is nobody left in the village to authentically say whose lands were acquired for the purpose, but as a guess they suggest that the land belonged to Munilal Mukhiya, Chunnilal Yadav, Munilal Yadav, Ramlakhan Yadav, Bilat Yadav of Inarwa and Tarini Singhdev of Deorh. It was around 1961-62 that the oustees came to settle here. Most of them were from Basuari, a village that was 4km east of Inarwa and trapped between the river and the western embankment of the Kosi. They came here and also built their houses but the distance between their original village and this place was such that it was impossible for them to look after their fields. They all went back shortly thereafter. Says Sukh Dev Yadav (62) of Inarwa, "Only four persons including me were left at the Inarwa rehabilitation site. I was a government servant and had relations in Nighma village within the embankments and we were given a rehabilitation site in Mujaulia Tol. Using my contacts in the government, I got my rehabilitation site shifted to Inarwa and started staying here ever since. Other than me, Lakshmi Mukhiya got rehabilitation in Inarwa due to the connections of his in–laws. Two other persons, Rasik Lal Yadav of Harri and Kavi Pundit of Sanghee were also rehabilitated here. All the rest came and went back."

When a rehabilitation site is vacated, others start occupying that land. Some build houses and others start cultivating it. This occupation is directly linked to the muscle power of the occupant and this occupation cannot be vacated. The Rehabilitation Office at Nirmali and Supaul tried to get possession of such land but failed. As long as the Rehabilitation Office was located in Nirmali, the vacant land used to be leased out to farmers. This too is now suspended. Should one travel from Ghoghardiha to Inarwa, there is a Vishwakarma temple just at the periphery of the village on the left of the road. The land opposite this temple is the rehabilitation plot acquired in Inarwa and is open to encroachment. No person of Basuari lives on it but the details submitted to NHRC by the Water Resources Department suggest that there is no vacant land in Inarwa.

Let us now consider Basuari. The elders in the village believe that there were about 300-325 families in the village in the 1950s; that number may have grown to about 1600 these days. When they were asked to move out from within the embankments, about 300 families were dispatched to Belha and the remaining 25 families had to resettle in Inarwa. Because of the distances, those shifting to Inarwa returned almost immediately from there. Altogether, four persons of Basuari, namely Nathuni Mahato, Ram Sevak Saw, Phanik Lal Mahato and Ananda Mandal are still living in Belha with their families. Says Jaikrishna Yadav of Basuari that the generation of his father had built houses in Belha but most of the money that they were entitled to was swindled by the brokers. When they did

not get any facility at the new location, most of the people salvaged whatever they could from the houses and shifted back to Basuari. Rehabilitation, thus, went with the wind.

The story of Nirmali Lachhminia is not much different. Here the entire rehabilitation site is said to be occupied. Families from Manohar Patti (Barhara) and Pachgachhia — both in Marauna block — were rehabilitated here. Barhara was 7km from the location and hence the people just came here and went back. About 1.26ha of land of this site houses Nirmali College and the land is now settled in its name. Yet it is claimed that the rehabilitation site is fully occupied. It is true that some families of Barhara and Pachgachhia still live on this land but many of the residents of the site are simply illegal occupants. The successors of Bhushan Gupta, former Chairman of Saharsa District Board, were also rehabilitated at this site and some of them still live there. Most of the other families have gone back to the original village.

Officials at the Rehabilitation Office at Supaul maintain that there is no vacant land at the rehabilitation sites and even if there is some, it is leased out annually to the farmers for agriculture. A list of the villages trapped within the embankments or the ones intercepted by the embankments in the Kosi Project is given in Annexure-1 at the end of this chapter.

The overall rehabilitation situation in the Kosi Project is in a very bad shape. There is no clarity about which village is rehabilitated where. There is some trace of those who migrated to distant places in search of employment after moving to the rehabilitation sites and have maintained links with their village, but those who left for good are untraced. Even their relatives do not know anything about them. There is no record of those who have settled at various rehabilitation sites without valid authorization and at the same time there is no record of those who had the authority to live at a particular place but have gone elsewhere. People only move back to their villages within the embankments because of livelihood compulsions. If their land is not eroded, sand cast or water logged, they can at least farm it in the rabi season.

In 1956, M.M.Prasad had quoted a figure of 45,291 families likely to be trapped within the embankments, and the WRD of GoB says, in 2001, that it has rehabilitated 39,527 families from within the Kosi embankments. By its own admission then, some 6,000 families are yet to be rehabilitated. Also when M.M.Prasad gave his figure in the Bihar Vidhan Sabha, the eastern embankment of the Kosi was to be extended only up to Mahishi and the western embankment was to terminate at Bhanthi. Only 304 villages were expected to be entrapped by then. But the eastern embankment was extended to Koparia and the western embankment to Ghonghepur bringing another 76 villages within them. Adding these families to the list, further swells the number of families to be rehabilitated. As a crude guess, there should be at least 10,000 additional families. Further, when Phase-1 of the Kosi Project was completed in 1985, it was reported that a sum of Rs. 180cr was spent on the Project till then. This was more than four times its original estimate. When the prices of men and material escalated many fold, why was the same increase not foreseen in the rehabilitation costs, that it had risen only marginally to Rs. 2.27cr against the original estimate of Rs. 2.12cr? It must be noted that land for rehabilitation sites for many villages is yet to be acquired. Ramesh Chandra Jha, in his statement, has cited the names of many such villages.

NHRC forwarded the reply of the WRD of GoB to Kosi Mukti Sangharsh Samiti (13th May 2004) to seek its opinion over the matter. In response to the letter of WRD of GoB, Kosi Mukti Sangharsh Samiti raised the issue of equality of all citizens before law and requested that the NHRC reconsidered the whole issue afresh. The positions are very clear. As a rule, fights break out in villages if rainwater from one's roof flows over a neighbour's plot. If that be the case, how the government can create a situation by which the waters of a river like the Kosi flood a village so that all sources of livelihoods are destroyed? What sort of justice is this? Why should Government employees of Block Office determine whether any development work is possible there or not? Why are villages within the embankments painted differently on the block maps? Why can't we demand a road or a school in our village from their leaders? Why should we be termed as 'relief seekers' or '*reliefkhor*' (one who survives only on relief) when we could make our living through our hard work?

NHRC forwarded the letter written by Kosi Mukti Sangharsh Samiti to the Government of Bihar" for further necessary action as deemed proper, in the light of the suggestions made by the opposite party" and closed the case on the December 10, 2004. It must be noted that there was no visit made by NHRC to the area before it reached the decision to dispose off the case nor did NHRC remind GoB to furnish all the information that it had asked for on March 22, 1999. The final letter from NHRC is attached (Annexure-2).

This, sometimes, gives an impression that those living in the protected countryside can raise such demands. But if one says this to the people living within in the protected countryside between the western Kosi and eastern Kamla embankments, they would pity him. To see the foolish and mischievous deployment of technology, one should take a trip to the *doab* of the Kamla and the Kosi.[32]

What choice do the people, or any organization like the Kosi Mukti Sangharsh Samiti, have to express

their frustration against the apathy of the Government towards their genuine problems ? They can go in for sit-in strikes, processions, demonstrations, *gherao*, or, at best, boycott the elections. Even that was resorted to by the people under the banner of the Kosi Mukti Sangharsh Samiti in the 1999 elections of the Lok Sabha and 2000 election to the Bihar Vidhan Sabha. Politicians want votes and they know very well how to appease people by making false promises. They played the trick on both the occasions and that was all.

The NHRC, in its wisdom, has chosen not to provide succor to the hapless embankment victims. Now their last hope is to appeal to the Supreme Court of India. Should that plea fail too, they can only knock on the doors of the Society For Prevention Of Cruelty To Animals (SPCA). This is what the Kosi embankments have done to nearly a million people.

8.10 Dwindling Choices for the Embankment Victims

People's welfare depends to a large extent on the will power of governments. Successive governments in Bihar took a very casual view of the problems faced by the embankment victims resulting in their pauperization. Their sacrifices would have served some purpose if the intended benefits of the Kosi Project had accrued to the people in the countryside. Almost all the political parties of the country have ruled the country and the state at some point or the other and except for some individual efforts none of them have raised the issue except at the time of elections. Proposals for dams on the Kosi at Barahkshetra, on the Bagmati at Nunthar and on the Kamla at Chisa Pani have been aired for a long time but nobody knows when these dams will become a reality. Doubts exist already whether these dams will serve any useful purpose as far as floods are concerned.

Whenever any serious initiative is taken on these proposed dams, then and then only, will the embankment victims get an opportunity that they will be able to impress upon the Government and the financial institutions who will finance these dams to include the cost of their rehabilitation in the estimates of the project and ensure implementation of the promises made to them. They will get an opportunity to assert that unless the promises made to them are fulfilled first, they will not allow the promoters to build the dams. The construction of the Kosi High Dam at Barahkshetra should be subject to the condition of rehabilitation of the embankment victims.

It is a fact that the promises of land for land or house for house and a job to one person in the family made to the people were all false. There was neither any intention to fulfill these commitments nor was it possible. Politicians cheated the people wholesale. But the provisions of the Chandra Kishore Pathak Committee can still be fulfilled. Reservation in government jobs, which were endorsed by the Pathak Committee, would not cost anything extra to the exchequer. They should be given to the embankment victims.

A rail-cum-road bridge is being constructed to connect Dagmara to Bhaptiahi. This is a welcome move by the government. A couple of more bridges built on the Kosi will provide better connectivity to the area with the outside world. The Gandak River already has four such bridges at Valmikinagar, Motihari, Reva Ghat and Hajipur. Similar demands for the Kosi should also be met. It must be ensured, however, that proper waterway is provided under these bridges failing which massive erosion and sand casting, upstream and downstream of the bridges, will take place in the future and the people will be further inconvenienced.

Says Satya Narayan Prasad of Simrahi village in Raghopur block of Supaul district, "My ancestral village, Bhulia, was located within the river and the Kosi embankment. Some villagers were resettled in Pipra village. These families went to settle in Pipra but soon returned to Bhulia. Erosion of our village and sand casting of our lands is our fate and we do not remember how many times our village was eroded. Forget about our condition within the embankments, the situation in the protected areas is not encouraging either. We have the eastern Kosi embankment, Gamharia sub-branch canal of the Kosi project, a road connecting Saharsa to Birpur and the rail line linking Saharsa to Jogbani here. This gives an impression that our area must be reasonably well-off. But there is massive waterlogging due to the eastern embankment and the Gamharia sub-branch canal. Our land has become a swamp. We can only raise summer crops and the irrigation for them is provided by pumps and not by the Gamharia canal. A rabi crop is possible only on the uplands but that area is very small. Kharif crops are ruled out. The road is such that if you board a bus, your head will collide with your fellow passenger at least ten times and on equal occasions you will dash against the front seat…The Government is building a bridge connecting Dagmara to Bhaptiahi in our area. The embankments on the Kosi are separated by 8-9 kilometers here but the waterway provided in the said bridge is reported to be only 2 kilometers. This difference is unbelievable. With the consequent rise in the

Satya Narayan Prasad

water level upstream of the bridge, more villages will remain submerged for a longer time every year and there will be heavy erosion of land south of the bridge. People on either side of the bridge will be uprooted. We have approached the authorities many times to provide extra waterway under the bridge but without any success. Construction of the bridge and improving communication is a good thing but how many times more must we be uprooted?"

The embankment victims must continue their struggle to get economic rehabilitation as per the provisions of Pathak Committee, strive to get additional bridges and impress upon the government to clear waterlogging from within the Kosi embankments and outside them. They will get an opportunity to press their demands when the proposed dam at Barakhshetra is to be built. If they miss that opportunity and start celebrating that the government has at last accepted their suggestion for a dam at Barakhshetra, then there will be no redemption for them thereafter.

The embankment victims have one more option open to them. That is to elect such persons to represent them in proper forums who will look after their interests and struggle for their rights. This opportunity comes at least one day in five years, if not earlier. That is when people are free to choose their rulers. One day prior to that event and one day after it, they become subjects of their chosen ones. Democracy provides that unique opportunity and if it is lost in the name of caste, religion, language, region, affiliations and false promises, the responsibility then lies exclusively with the people. The pity is that so far, the people have not been able to rise above these narrow considerations and have been repeatedly taken for a ride by unscrupulous elements. It takes a lot of wisdom to develop such consciousness.

8.11 Realigning the Block Boundaries

There is a need to reorganize the district and block boundaries. Ideally, a district needs to be carved out for the area trapped within the Kosi embankments with its headquarters somewhere just in the middle, adjacent to Supaul. That is the only way to educate the administration about the problems faced by the people living within the Kosi embankments.

There is no sense in including villages that are located west of the western Kosi embankment in Mahishi block, as at present. The predicament of many villages in Madhubani district that are located at the tail end of the Kamla embankments is similar. Their markets are in Darbhanga and not in Madhubani. Why should they be a part of Madhubani? What is the justification for running the administration of Marauna block from Belha? These obvious and essential changes never get the attention of the politicians. nor is a demand ever raised by the public in an organized manner, to that affect. These changes should, however, receive priority.

8.12 Conclusions

The politicians were under oath to serve the people but they did not mind giving false assurances to them. Then, there were engineers who should have been guided by the ethics of their profession, which is often identified with the legendary Bhagirath and Vishwakarma. The politicians had an excuse that they did not understand the basics of engineering and technical matters and only followed the advice of engineers. The latter hid behind the embankments, saying that they were needed for providing immediate relief to the people who could not wait for 15 long years for the Barahkshetra Dam to be constructed. They have another excuse, which is never made public, i.e., that they are not free to take any decision independently and have to defend all the decisions taken by politicians. This complementary back-scratching never ends. It is not necessary that political decisions, however popular they may be, be technically sound, but once taken they get political legitimacy as the engineering community maintains silence over the issue. It is a practical difficulty that an engineer, even though he is a celebrity in his field, hesitates to give the right advice to politicians. There is no solution to such a problem.

This chapter highlights the plight of the people who have lived and continue to live within the Kosi embankments. In the name of development, hundreds of thousands of people were uprooted and injustice was meted out to them. People who live outside of north Bihar may wonder how so many people have continued to suffer for such a long time why then they do not raise voices against the injustice.? The fact is that the people have become resigned to their fate. They have lost the will to assert themselves. Instead of putting up a fight, they prefer to migrate to Delhi, Punjab, Haryana, Gujarat or Maharashtra.

There is a flip side to this question and that is, if the people suffered to such an extent, what was the government doing? Successive governments have never considered rehabilitation seriously. Today they have closed the files. Almost all the nation's political parties have now ruled the state and the country and no party can point an accusing fingers at the others. Non-government organizations distribute relief and advocate that flood disasters be managed. Correcting the wrongs done to the people is not on their agenda either. The injustice wrought on unsuspecting people by technological hubris has been largely forgotten in the

march toward modern development. Similar situation exists not only in the plains of the Kosi River but also along the embankments of the Mahananda, Kamla, Gandak, Bagmati, and Burhi Gandak rivers in north Bihar.

In the meantime, within embankments and the waterlogged regions, hapless people wait for some Messiah to emerge and rescue them. The tragedy is that there is none.

Annexture 1

District and Block wise list of villages trapped within Kosi Embankments or bisected by them

District Saharsa

Navhatta Block

1 Devka
2 Hati
3 Kathuar Eraji
4 Bariyari
5 Navhatta
6 Rampur
7 Partaha
8 Bakunia
9 Barhara
10 Mahua
11 Chhatwan
12 Majhaul
13 Shahpur
14 Govindpur
15 Darhar
16 Bhelahi
17 Garhia Lohar
18 Bhakua
19 Mohammadpur
20 Kumharauli
21 Mohanpur
22 Enaetpur
23 Chandrain
24 Ekarh
25 Rasulpur
26 Naula
27 Birjain
28 Narga
29 Narayanpur
30 Lalpur
31 Sattaur
32 Murli
33 Garhia
34 Dharmapur
35 Kedalipatti
36 Trikhutti
37 Barahi
38 Purushottampur
39 Paharpur
40 Asanahipatti
41 Kaithwar
42 Katiyahi
43 Brahmapur

Mahishi Block

1 Kudgaon
2 Bhelahi Kalan Khurd
3 Birgaon
4 Amahi
5 Tarahi
6 Saharwa
7 Samani
8 Bhanthi
9 Nawada
10 Dumari
11 Supaul
12 Dhapari
13 Telwa
14 Thanwar
15 Pranpur
16 Semar
17 Nonia
18 Mahisaraho
19 Parewa
20 Aina Sohagpur
21 Aina
22 Mangarauni
23 Karhara
24 Ghonghepur
25 Jhara
26 Sisauna
27 Bihna
28 Rakhati
29 Dharmapur
30 Dhanauj
31 Rajhanpur
32 Birwar
33 Sirwar
34 Maina
35 Baghaur-1
36 Baghaur-2
37 Balia
38 Kundah
39 Arapatti
40 Angsir
41 Baghawa Hta Abad
42 Chataria
43 Dhamwara
44 Gandaul
45 Mahishi
46 Teghara
47 Maina Arazi
48 Baghaur-3
49 Sarauni
50 Sarauli Khurd
51 Pachbhinda

Simri Bakhtiyarpur Block

1 Ghoghsam
2 Sukhasan
3 Kathdumar
4 Agar
5 Belwara
6 Dhanupara
7 Paharpur
8 Tilathi

Salkhua Block

1 Kabira
2 Sahuri
3 Chiraiya
4 Bhirakhi
5 Khajurbanna
6 Sauthi
7 Kabirpur
8 Baldehi
9 Tajpur
10 Raiginia
11 Alani
12 Sahuriya
13 Basahi
14 Shahgaon
15 Gordah
16 Kamara
17 Gauri
18 Bhelawa
19 Situaha
20 Utesara
21 Kotwalia
22 Chhachhua
23 Samhar Khurd
24 Samhar Kalan
25 Kachaut
26 Chanan
27 Khochardeva
28 Kathghara
29 Matihani
30 Sevati
31 Murla
32 Mian Jagir
33 Salkhua
34 Bangawan

District Supaul

Basantpur Block

1 Bhimnagar
2 Dubiyahi
3 Madhura
4 Raniganj
5 Dumari Millik
6 Piparahi Patti
7 Dharha
8 Chhitauni
9 Dharhapatti Az Rakbe Chaudeep 23/1
10 Dharhapatti Az Rakbe Chaudeep 23/2
11 Dharhapatti Az Rakbe Chhitauni-24
12 Dharhapatti Az Rakbe Chhitauni-24/1
13 Dharhapatti Az Rakbe Chilauni - 23
14 Dharhapatti - 23
15 Bahadurganj
16 Saranpur
17 Parsahi – 1
18 Parsahi – 2
19 Parsahi – 3
20 Narpatpatti
21 Bhatania/Satanpatti
22 Piparahi Goth
23 Saheban
24 Lakshmipur
25 Panchpadaria
26 Bhagwanpur

Nirmali/ Bhaptiyahi Block

1 Kunauli
2 Kamalpur
3 Dagmara
4 Bathanaha

5 Bilandi
6 Dharhara
7 Banainia
8 Rupauli
9 Simri
10 Sikarhatta
11 Dudhaila
12 Dighia
13 Bela
14 Maura
15 Reharia
16 Tharia
17 Majhari
18 Jhahura
19 Lagunia
20 Mahua
21 Hariyahi
22 Jarauli
23 Harpur
24 Laukaha
25 Bahuarawa
26 Ugripatti
27 Siyani
28 Karhara
29 Kabiyahi
30 Takia
31 Bajdari Chakla
32 Gopalpur
33 Baisa
34 Kalyanpur
35 Gidhni
36 Bhiliya
37 Kataiya Bhuliya
38 Baltharawa
39 Dharhi
40

Kishanpur Block

1 Kalimugara
2 Dinajpur
3 Lachhminia
4 Khakhai
5 Shivpuri
6 Tharbittia
7 Nauabakhar
8 Kamldaha
9 Arraha
10 Gadahawa
11 Sonbarasa
12 Parsa Madho
13 Asanpur Kupaha
14 Bauraha
15 Sujanpur
16 Maujaha
17 Siswa
18 Begamganj
19 Panchgachhia
20 Sukumarpur
21 Dubiyahi
22 Dighia
23 Bela
24 Abhuar
25 Kishanpur
26 Chandpipar
27 Kulipatti
28 Saraigarh
29 Itahari
30 Sanpataha
31 Aurahi
32 Banainia

Supaul Block

1 Sukaila
2 Bela Parsauni
3 Nirmali
4 Surtipatti
5 Dabhari
6 Ghivak
7 Ghuran
8 Mugrar
9 Dumaria
10 Fakirana
11 Karnapatti
12 Balwa
13 Narahia
14 Pipra Khurd
15 Bairiya
16 Basbitti
17 Gopalpur Sire
18 Gopalpur Khurd
19 Chandail
20 Maricha
21 Parsauni
22 Rampur
23 Nemua
24 Bijalpur
25 Bakaur
26 Telwa
27 Piprahari

Marauna Block

1 Sisauni
2 Rasuar
3 Dhabghat
4 Kadmaha
5 Gotarahi
6 Kataiya
7 Lalmania
8 Belhi
9 Maheshpur
10 Gamharia
11 Padari
12 Mahuahi
13 Kulharia
14 Saroja Bela
15 Koni Inamat
16 Panchgachhia
17 Manoharpatti
18 Barahara
19 Jobaha
20 Ghogkariya
21 Parikoch
22 Baskhoraha
23 Hadari
24 Badurahi
25 Pachlehra
26 Khorman
27 Chandergarh
28 Kamrail
29 Marauna
30 Kusmaul
31 Janardanpur
32 Rataho
33 Ganaura
34 Parsauni
35 Mugarihal
36 Khokhnaha
37 Kuraon

District Madhubani

Laukahi Block

1 Narendrapur
2 Mahadeomath
3 Gidarahi
4 Mahathaur Goth
5 Dhanchheya
6 Hardwar Laukaha
7 Kaurihar Laukaha
8 Baruar
9 Narahi
10 Bangama
11 Mahathau
12 Rajarampatti

Ghoghardiha Block

1 Basuari
2 Pipra Kamalpur
3 Alaula
4 Hadari
5 Mainahi
6 Banarjhula
7 Amahi
8 Devnathpatti
9 Sarauti
10 Nighma
11 Nauabakhar
12 Dhanpat Barhi
13 Hatni
14 Rajuahi
15 Saharwa
16 Dhabghat
17 Ghoghardiha
18 Kisunipatti
19 Deorh

Madhepur Block

1 Kalikapur
2 Mataras
3 Bishunpur
4 Pauni
5 Ratuar
6 Luchbani
7 Tengari
8 Rupauli
9 Tardiha
10 Chunni
11 Nawada
12 Narhi Jagannathpur
13 Karhara
14 Dwalakh
15 Kharik
16 Bheja
17 Parsauni
18 Balthi
19 Bakua
20 Bhargawan
21 Mani Mahpatia
22 Lilja
23 Parsauni
24 Mahpatia
25 Chhatauni
26 Mehsha
27 Bhawanipur
28 Bagewa
29 Rampur
30 Mainahi
31 Pariyahi
32 Gobatgarha
33 Asurgarh
34 Garhgaon

35 Basipatti
36 Goahi
37 Bhagta
38 Darah
39 Bela
40 Harsankari
41 Khajuri
42 Tengraha

District Darbhanga

Kiratpur Block

1 Rasiyari
2 Jhagarua
3 Tarwara
4 Jamalpur
5 Narkatia
6 Bhubaul
7 Bhandaria
8 Kadwara
9 Birdipur

Annexture 2

National Human Rights Commission
(Law Division)
Sardar Patel Bhawan
Sansad Marg, New Delhi 110001
Case No: 746/4/98-99
Dated 10-16/12/2004

To
Mr DEV KUMAR SINGH
KOSI MUKTI SANGHARSH SAMITI
DISTT SUPAUL
BIHAR
BIHAR BIHAR

Sir/Madam,

With reference to your complaint dated, I am directed to say that the matter was considered by the commission on 7/12/2004. The commission has made the following directions.

A complaint was received from Kosi Mukti Sangharsh Samiti, Supaul, Bihar, alleging that due to construction of embankments of river Kosi, residents of the area residing between two embankments are suffering as their land have submerged in water. The complaint was prayed for intervention by the Commission and justice.

The Commission took cognizance and wide proceedings dated 12.2.1999 issued notice to the Chief Secretary, Government of Bihar calling for a report in four weeks.

A report dated 11.10.2001 received the Government of Bihar states that the Government had undertaken to rehabilitate the people inhabiting the area lying between embankments and provisions were made to provide sites for their house, falling between the embankments as per the scheme. A sum of Rs. 2.12 Crores was sanctioned by the Government for rehabilitation of villagers.

The Commission, after considering the report, wide proceedings dated 25.2.2002, directed the Government of Bihar to intimate the progress made in the rehabilitation of the displaced persons together with the plan for completing the process of rehabilitation.

A report dated 1.11.2002 has been received from the Government of Bihar stating that the Government have tried to solve the problem and difficulties of the people within the two Kosi embankments as far as possible. The details of the work done has been given as follows,

i) An area equivalent to the area of homestead lands of each evacuee was provided outside the embankments as close to the cultural lands as possible.
ii) An additional area equal to 40 % of the total area of the homestead lands was provided for common facilities, such as roads, schools, tanks, wells, community halls, etc. The entire expenditure of providing these amenities was met by the Government. Moreover, wherever necessary, boats were also provided at the cost of the Government.
iii) House building grants equal to the value of the house within the embankments without making any deduction, whatsoever, for depreciation were paid in each case and the houses within the embankments were also left with the owners, to enable them to utilize the same for the purposes of carrying on their cultivation from there.
iv) People had the option to construct houses on their own lands away from the rehabilitation sites but in those cases price of homestead lands was not paid to them nor any common facility were provided at Government cost at such places. They were, of course, paid house building grants, on the usual basis.
v) It is rather interesting to note that in 1968 more than nine lakh cusecs of water flowed down the river Kosi, the highest flood level recorded in the last several decades. As a result, the people within the embankments have not found it so difficult to continue to live in their old homes and hearths. In fact, many families which had been rehabilitated outside the embankments have, after getting final payment for their new house, gone back to their old homes and hearths. In other words, while Government have sanctioned a scheme for rehabilitating these people at places of greater safety, for one reason or the other, these people continue to live in their old homes and hearths.

A gist of the report was forwarded to the complainant for its comment, if any, wide proceedings dated 6.5.2004.

The complainant Kosi Mukti Sangharsh Samiti in reply dated 14.6.2004 has stated that,

i) Government of Bihar mooted a number of projects for the rehabilitation of persons displaced from Kosi embankments, but none of them was brought to reality. The displaced persons continued to have problems of earning their livelihood and are forced to migrate to Punjab and other places.
ii) That without any concrete, financial package, the problem of rehabilitation cannot be permanently solved. Most of the displaced persons have not been provided with land. Even those, who have been allotted land and are not able to cultivate the same as the land allotted to them is 'banjar' and uncultivable. A number of villages at Supaul, Darbhanga and Madhubani have been partly submerged between the two embankments but the villagers have not received any compensation.
iii) The report of the Government that industry and pisciculture were being developed in the area is false. Pisciculture is not possible between the two embankments. The report submitted by Government of Bihar is exaggerated and false. The residents of the area are still living a miserable life.
iv) That no arrangement for any medical facilities have been made by the Government in the area. No hospital has been established. People are suffering from various contagious diseases.

A copy of the response received from the Kosi Mukti Sangharsh Samiti be transmitted to the Government of Bihar for further necessary action as deemed proper, in the light of suggestions made by the opposite party. With these observations the case is closed.

Yours faithfully,

ASSISTANT REGISTRAR(LAW)

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9

If This is Heaven, What is Hell?

We have so far analyzed various aspects of flood control and irrigation in the districts affected by the Kosi Project. In this chapter we shall study the direct impact of flood protection measures and irrigation schemes on the lives of the people. We will see how the problem has shifted from one place to the other, from one population to another and how a section of the society has been compelled to pay the price of development which could not reach even the targeted beneficiaries. We shall touch all the aspects of human life that have been hit by such measures.

9.1 Livelihoods

Agriculture and cattle rearing have been two major occupations of the people in the area before and even after the construction of the embankments. Before the start of flood control measures and construction of the embankments, the river was free to wander and most of the Kosi water used to pass through the various channels of the river. There was a moderation of floods because the free-flowing river spread its floodwater over a vast area and the flood levels never grew alarmingly. The trouble, however, was that the occupants of the floodplains did not know which stream of the river would become the major carrier of the flow although there was a pattern in the shift of the flow. Once that was ascertained, the problem in the rest of the basin used to be resolved to a great extent. A good paddy crop followed by a good rabi harvest was normal in the area. Old British administrative reports and reports of the Public Works Department do not suggest many problems in the Kosi Basin. They faced major problems in the Gandak Basin where frequent

With Kharif and Rabi Crops lost, farmers take up hot weather Paddy

Make shift Houses on the Embankment

breaches in the river's embankments used to keep the engineers on their toes. The reports of the various Famine Commissions and settlements in the Kosi-Kamla basin also do not talk about scarcities in the basin. That probably is the reason that elderly people in the basin maintain that in earlier days, when the rivers were not embanked, the floodwaters used to come and go and agriculture rarely suffered although there were some seasonal inconveniences.

After embanking of the rivers, three distinct areas emerged on the landscape. One, the area trapped between the two embankments of the river that was regularly under attack from the river. Erosion and sand casting of the land became more intense. Although the villagers were given some rehabilitation sites outside the embankments, they had to depend on the entrapped land despite erosion, sand casting and waterlogging for their livelihood. This was the major reason why people shifted back to their villages deserting the rehabilitation sites as this was the area that was still hopeful of getting the fertilizing silt of the river together with the floodwaters. The riverbed had started rising with the passage of time and newer areas emerged where agriculture was possible. No wonder when the Planning Commission evaluated the impact of the performance of the Kosi embankments in 1979 (Chapter 5), it found that agriculture within the embankments had improved considerably. The increase of agricultural area and crop production, however, was purely accidental rather than by design.

Unfortunately, when any land gets eroded within the embankments, the owner of the land loses its ownership, which gets transferred to the government automatically, but it does not revert back to the owner in case the land re-emerges sometime later due to sedimentation The state becomes the owner of that land and unless resettled in the name of the original owner all the rights of that piece of land remain vested in the state. Since the latter virtually does not exist within the embankments, the local toughs against whom no one can file an appeal occupy the resurfaced land. Resources within the embankments are slowly slipping into the hands of the criminals. (See Box: Margh-e-Amboh, Jashn-e-Daarad)

Continuing erosion of land, uncertainty of river behaviour, shifting of the riverbed within the

Margh-e-Amboh, Jashn-e- Daarad

Mohammad Ayub of Bhelahi village, Mahishi block, in Saharsa district lives sandwiched between the main river and the western embankment of the Kosi. He says," The river is in our homes and our homes are in the river. Water stays around us for three to four months. If you have to go to the neighbour's house, go by a boat, want to offer *namaz* in the mosque, you will need a boat, to answer nature's call one goes by boat. Men and women are all equal in that respect and all are exposed to public view. Our Panchayat has a population of about 10,000. There is a middle school, a primary school and a *madrassa* in our village and all these remain under waist deep water for, at least, three months.

The bed level of the river keeps on rising and one tends to ignore it as if it is a very insignificant event but it has a direct impact on the plinth and floor level of our houses. Within just five years, so much silt is deposited in our village that the doors acquire the size of a window. Keeping pace with the rising bed level of the river, one has to shift one's house to a different place. When these embankments were built, the western embankment was to pass through Punach and the eastern embankment was to go through Bangaon. They kicked the embankment from both sides and the spacing between them shrank to Ghonghepur in the west and Mahishi in the east, almost half the designed spacing. They built these embankments according to their own whims and fancies. Fifty years ago, we were illiterates and innocent and they took full advantage of it and made fools of us. This embankment was built in 1956 and the Tilyuga that was flowing east of our village got pushed into our village and we had a first hand feel of the situation that we would face in future. It led to turmoil. So many dissenters and protesters like *mukhiya* Abul Hassan, Mohammad Insha, Shamsuddin, Aafaq, Habibullah, Suleman, *moulvi* Nazir, Nizamuddin and Abdul Rashid were lodged in jail. Some of them are still surviving.

We all put up a fight against the construction of the embankments. The leaders, sometimes, used to console us that all our demands would be fulfilled and at other times they would tell us that the entire area would become an ocean and we would have to move to some other place. After a lot of tussle, we got a rehabilitation site in Jallai. Some of us went there and returned soon as that land got waterlogged. Then, is it possible to settle a village on two *katthas* (roughly 350 sq meters) of land per family? The government only counts people, it does not count the cattle. Where will the cattle go? Nobody thought of the threshing and grazing grounds. Those who did not know what a village looks like were at the helm of the affairs. What else do you expect from such a person other than lies?

We were lured by the promises made to us. They said they would irrigate all our fields. Where is that irrigation? There were promises of orchards, where are they? They promised us that they would turn this place into heaven. If this is heaven, what is hell? We pay revenue for sand cast land, which they promised to withdraw. Our government is not bothered about the sediments deposited in our homes but if our eroded land re-emerges from the river, due to sedimentation, it claims that land. We cannot till our own land but criminals and other toughs don't have any problem in claiming that land. Thatch straw grows on the fallow land of the farmers and it fetches a good price to the owner but no farmer can harvest it because the criminals harvest it and sell it. Thus the land and the thatch straw may belong to anyone but the harvest belongs to someone else and it is he who is benefited, not the owner. If you want to get out of this place, you get sick of paying boatmen at every crossing of the river. If we had known that this was going to be our fate, we would have either committed suicide or killed the embankment builders. Unfortunately, death is in nobody's hands.

The western embankment breached once in 1968. It was late at night. And before the breach it was a sight of *Qayaamat*. Somehow we escaped death. Then there was some relief when the embankment breached in 1984. This embankment has made us so selfish that we want it to breach knowing fully well that it will spell doom for those living outside the embankment. Most of them are our kith and kin. We face the music every year; let those outside the embankments have a feel of it sometimes. Those living outside the embankments do not marry into our villages. For shopping, we have to go to Saharsa and if you are able to reach there, it is an occasion to celebrate and if you return safely, you get a new lease of life.

Yes, we vote but not to ensure any victory of our candidate but to ensure that, at least, one among us will get a life that would be worth living. Now we have reached a stage where we have no regrets. There is a Persian saying, *Margh-e-Amboh, Jashn-e-Daarad*, which means that when one person dies it leads to mourning, but when many people die simultaneously it leads to celebration. Some people would be engaged in collecting the corpses, some would arrange for bathing the dead bodies, some would arrange for digging the graves and some would prepare for the last *namaz* and the others would look after the guests and so on. It leads to a lot of activity, everybody has some duty to perform and nobody finds time to cry for the dead. We are precisely in that situation now. Everybody is busy and nobody takes notice that we are all virtually dead here. People come here to watch us as if we are a spectacle on display."

embankments, sand casting, lack of irrigation facilities, lack of marketing facilities, inaccessibility and non-availability of credit facilities, etc. are factors that put a question mark over agricultural production and hence employment within the embankments.

The situation in the second zone, in the protected areas adjacent to the embankments, is also precarious but for a different reason. The entire strip outside the eastern embankment, from Birpur to Koparia is waterlogged. T.N. Lal Das, the collector of Saharsa, wrote in 1996, "About one-fourth of the total area of the district lies inside the Kosi embankments which faces the fury of the Kosi flood, bund erosion and mass devastation every year. Kosi has been depositing around 6" and 9" silt in the head and tail every year inside the embankment. Due to this natural phenomenon, an area inside the embankments has become high which causes regular seepage of Kosi water. Due to heavy seepage, (an) area stretching about 3 kms east from the Kosi embankments has been rendered uncultivable due to waterlogging. The southern portion of the district also suffers from floods due to the backflow of Kosi water. The type of the soil is purely sandy with a low level of fertility. Due to this adverse geographical situation for economic upliftment of the area, a specific plan for development of agriculture is needed."[1]

A similar situation exists outside the western embankment for a considerable length along the embankment and the situation gets worse as one moves towards its tail end. Actually, south of Bheja (23 km south of Kisunipatti and 31 km north of Ghonghepur), there is little evidence of agriculture in the kharif and rabi season outside the western embankment. Some summer (zaid) paddy is produced in this area but that is only a recent change in the local cropping pattern. Many sluice gates are provided on the western embankment through which the tributaries of the Kosi are supposed to enter the river. Most of these rivulets reach up to the sluice gate, in an attempt to join the river, but just before they enter the embankment they abruptly take a turn because of the higher bed level of the river within the embankments and start flowing parallel to the embankment in the protected area, to the detriment of the agriculture there.

Once in 1959, there was a debate in the Bihar Vidhan Sabha whether a betterment tax should be charged in the areas protected from floods, outside the embankments. Lahtan Chaudhary (MLA) suggested, "Only a 2 to 3 miles strip of land parallel to the embankments has benefited from the embankments. The area beyond that strip has not benefited from the Kosi embankments."[2] The Collector of Saharsa and Lahtan Chaudhary were referring to the same piece of land. Obviously, what was worth taxing in 1959 had turned into a wasteland in 1996. In fact, the status of the land had changed even when the Planning Commission of India conducted its evaluation of the Kosi embankments in 1979. It is also a fact that the Government of Bihar never tried to rid this land of waterlogging and barring the constitution of the Pathak Committee and the subsequent constitution of the Kosi Pirit Vikas Pradhikar, it never proceeded a step in that direction. Subsequent reports of the Water Resources Department of the state claim that 65,000 ha have been cleared of waterlogging along the eastern embankment of the Kosi, a claim that is vehemently refuted by the local residents.

The third zone, which is away from the embankments in the protected area, does not suffer from the problems faced by these two zones. The agriculture, however, suffers here too because it needs irrigation and the Kosi canals do not provide much of it, as reviewed in Chapters 5 and 6. This area may not suffer from floods, being away from the river and the embankments, but the combination of roads, railway lines and canals obstructs the smooth passage of water resulting in acute waterlogging and the crop yield suffers.

Another area that is supposed to be free from all the flood problems is located between the Kosi and the Kamla embankments. Details about this area are available elsewhere and it is not intended to go into them here.[3] There are eight villages of Mahishi block in Saharsa district in this 'flood-free' zone namely Bhanthi, Garaul, Ghonghepur, Jalai, Manuar, Pachbhinda, Samani and Sankarthua. According to the 1991 Census report of the district, 96.85 per cent of the main workers in these villages reported that they were engaged in agriculture and allied activities whereas in reality, the area was permanently and visibly waterlogged and agriculture was not possible on the land in these villages until 10 years ago. Only after the Kamla started depositing sediments in these villages, about 10 years ago, some land emerged and cultivation became possible in the rabi season. Yet the villagers claimed that agriculture was their main occupation. It is not that they were lying. They were engaged in agriculture but in Haryana and Punjab. There was no local farming as the area was permanently under water.

As far as the Kosi Project is concerned, almost all the reports of the WRD of GoB suggest that 182,000 ha of land are waterlogged outside the eastern Kosi embankment. Another report of the Special Task Force on Waterlogging (1988) of GoB says that 223,400 acres (90,450 ha) land below the 145 feet contour line and 33,750 ha north of this contour line, totalling 124,200 ha, are waterlogged west of the western Kosi

embankment. Add to this 110,000 ha trapped between the two embankments of the Kosi (1958 figure, when only 304 villages were reported to be located within the embankments) and 10,000 ha within the eastern Kosi embankment and the river south of Mahishi where floods, waterlogging, erosion and sand casting are a permanent feature. Thus, a total of 426,000 ha of land is lost because of the project. In other words the Kosi embankments that were meant to protect 214,000 ha of land against recurring floods in the river now threaten just double that area.

9.2 Cattle Rearing

Cattle rearing has been a major occupation of the people in the region but has suffered greatly within the embankments and in the areas immediately outside them. Because of sand casting, erosion and waterlogging the grazing grounds have either shrunk or have disappeared. There used to be three blanket-weaving cooperatives in Saharsa till the 1950s which collapsed because grazing grounds were no longer available for the sheep. A ghee factory at Jhanjharpur also suffered the same fate around the same time. Mechanization of agriculture rendered bullocks useless for farmers and these animals found their way to slaughterhouses as far away as in Bangladesh. Godagari Ghat, in Chapai Nawabgunj district of Bangladesh, where the Mahananda meets the Padma, is a major cattle market where animals smuggled through the river route from India are sold to buyers from all over in Bangladesh.

Waterlogging in the area has added to the vulnerability of cattle and their survival rate has come down grossly. In the absence of dry land during the flood season, the cattle have to stand in water for many days, leading to aggravation of foot and mouth disease. Non-availability of edible food during the monsoon season forces them to live on water hyacinth, which they do not consume otherwise. This causes stomach disorders and foot and mouth disease and in the absence of proper medical facilities, often results in their death. Medical facilities for the cattle are as bad as they are for human beings in the flooded areas.

9.3 Fisheries

After the construction of the embankments and barrages there has been a marked reduction in the varieties of fish. Obstructions in the flow path of the rivers are stated to be the major reason of this decrease. Rajendra Chaudhary of Kathghara Punarwas village, Salkhua block, in Saharsa district says, "The construction of the embankments started in our area around 1963. We were school-going kids in those days. The trouble with fish started around 1970. Till then we used to get *Rohu*, *Gagar*, *Golha*, and *Boari* species in plenty. The lightest fish used to weigh, at least, 5kg. A long procession of these fish, called *pengar* or *ujahia* in the local language, could be observed in the river during the rains. They are not seen anymore. Along with them disappeared *Kokcha*, *Kaua*, *Dhellai*, *Aruari*, *Belauni*, *Seran* and *Rewa* species also. There used to be big crabs in the river water. They too are extinct. Uncontrolled use of fertilizers and pesticides in agriculture has added to the ruin of fish."

Neglect of ponds and reservoirs has also led to the dwindling of fish stock. In Madhubani district, for example, there are 25,000 ponds with a total area of about 40,000 ha. They have a potential to produce 400,000 tons of fish annually valued at Rs. 2000 cr.[4] Yet fish are imported to this district from Andhra Pradesh.

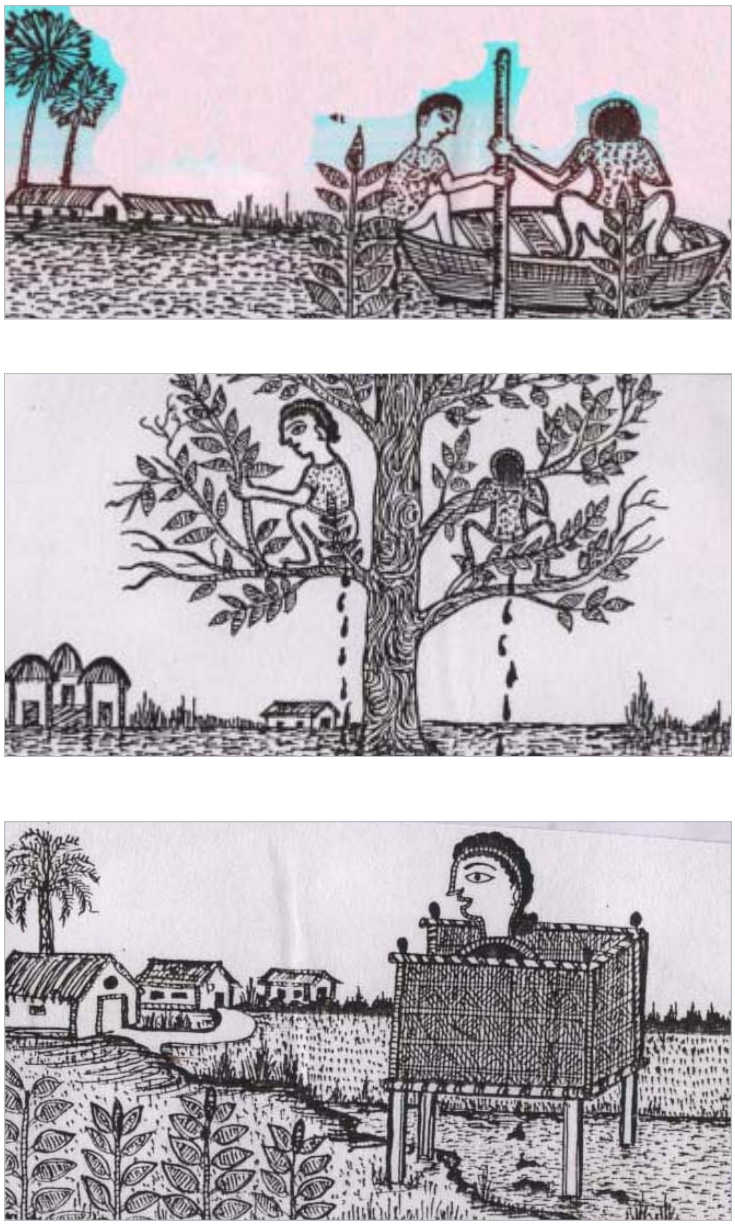
9.4 Fuel

Cattle-rearing in the area has suffered because of a lack of fodder. In the pre-embankment days, straw, thatch, cow dung cakes, firewood and *dhaincha* (*Sisvania*), etc. were the main fuels. There were plenty of trees all over and firewood was available for most of the year. These fuels were available virtually free of cost under the village set up. After construction of the embankments, a large variety of trees could not withstand sand casting and waterlogging and disappeared. This resulted in a fuel crisis and newer fuels like kerosene oil, coal, imported firewood and Manijara (Mandala or *Eleusineindica.L.*) came to the area. The fuel crisis that was limited to the rainy season earlier became a round-the-year problem. A more serious aspect is that now fuel has to be paid for. A normal size family spends around Rs. 400 to 500 a month on fuel alone. There is a need to find fuelwood species that can grow in waterlogged conditions.

9.5 Sanitation in the Flooded Area

People in the perennially flooded areas of north Bihar climb trees, sit in shallow water or move out in boats looking for some hideout behind bushes of aquatic weeds to defecate during the floods. One can easily imagine the plight of women under such circumstances because there is hardly any place available where they can get some privacy. Sometimes flood victims take shelter on some high ground, e.g., the embankment itself, the road, a railway line, a raised ground or a hillock and it takes little time for the place to become filthy.

In the stilts-supported houses of the northeast, latrines are made on the raised floor level while pigs are kept on the ground floor to do the scavenging part of it. In some Assamese houses floating latrines made



Different modes of Defecation in flooded areas

of braced banana stems are tied to one corner of the house. A hole of 12 to 15 centimetres diameter is cut in this platform for defecation. As the flood-level rises, so does the floating platform. Jute sacks or polythene bags are used to provide an enclosure for such latrines. This method for excreta disposal offers some convenience to the user but surely pollutes the water flowing underneath. Public health engineers have not responded to this grave crisis of sanitation.

9.6 Education

The status of education at the primary level within the embankments and outside them is alarming. The government believes that one of the major reasons for the high degree of illiteracy is illiteracy itself. People do not realize the worth of education and do not send their children to school. In the flooded or waterlogged areas, the safety and security of their children provides an excuse, as they may have to cross some streams in order to reach the school and parents do not risk sending their children to school. The teachers that are appointed in these schools are generally from outside the embankments. Inaccessibility of the schools affects them too. They have to traverse the same path to reach the school, which the parents of the children fear to tread. As a result, no school functions during the rainy (flood) season that may stretch from early June to late November. But the academic calendar of the school has to be followed and the syllabi are covered only after the rains.

Apathy of the teachers in attending the schools, lack of amenities, non-existence of the school building or its unauthorized occupation by local toughs and corruption in the functioning of the institution are other problems. In many villages the residents complain of connivance between the teachers and the school administration that induces most of the teachers to abstain from their duties. The government has started a school-going incentive scheme for children under which they get cash payment of Rs. 20/- per month together with free mid-day. This facility is available for schools that show 75% attendance on a regular basis. Villagers, however, complain that rice (@ 100 grams per student) is obtained from stores even if students do not come to the school and it never gets distributed. They charge the school committee members with manipulating the grains.

Belwara Panchayat in Saharsa district has two middle schools and one primary school. Both the middle schools, located at Belwara and Kaneria, have their buildings but the primary school at Hasulia has no building of its own and runs in a makeshift structure. Two teachers have been appointed in the Hasulia School and they are occasional visitors to the school. The former *mukhiya* of Belwara claims that he has not seen one of them for the past two years, since his posting to the school. An education committee is supposed to ensure the smooth functioning of the schools but, in most cases, this committee itself is defunct.

According to a report of the District Education Office, out of 277,873 children in the 6-11 years age group in Saharsa, 158,436 are enrolled in schools, whether government or private. Some 119,437 (43 % of the total) children in this group do not go to school. Of

A common primary school in the Kosi area

these, 54,724 (46 per cent) are boys and 64,713 (54 per cent) are girls. Similarly there are 103,936 children in the district of the 11-14 age group. Some 81 per cent girls and 69 per cent boys who should have been in schools do not go there, totaling 76,728 (74 per cent of the total number of this group). Thus out of a total of 381,809 children of school-going ages, 6-14 yrs, 196,165 (51.37 per cent of the total) do not go to school for some reason or the other. The Education Report believes that, "The basic reason for this situation is that the parents migrate to Delhi-Punjab in search of employment and remain there for the most part of the year. The women and the girls of the family, too, look for some local employment in agriculture or other income-generating activities. The cattle and kids too have to be looked after by elder brothers and sisters. In blocks like Simri Bakhtiyarpur, Salkhua, Mahishi, Sonbarsa and Navhatta the schools are spaced quite a distance apart and that deters the children from going to schools. The villages too are spaced at large distances because of the vagaries of the Kosi in these blocks… Co-education in many schools prevents many girls from going to school, as parents often do not approve of their going to co-education schools."[5]

It may not be correct to put all the blame on the lack of employment opportunity for parents, migration to distant places and their disinterestedness in educating their children. The fact remains that the facilities do not exist and the state government is indifferent towards raising the literacy levels of the people. Otherwise, it is difficult to explain the mushrooming of English schools within the embankments, as is seen everywhere else. People do not mind paying for the education of their children. Although these privately run institutions are hard to sustain and have a history of closing down, nothing prevents government schools from functioning, since the salaries are regularly paid and a huge education establishment is sustained at the district and the state level.

9.7 Child Labour

Another issue that links livelihood, employment and drop-outs from schools is the phenomenon of child labour. The Kosi-Kamla belt has the notorious distinction of being one of the established sources of child labour, most suited to the carpet industry. It is not surprising that direct buses ply from obscure places like Madhepur in Madhubani to Bhadohi in Uttar Pradesh. With the tightening of the noose around the carpet industry in Uttar Pradesh as a result of social movements against the evil, there has been some decline in the number of children going to Mirzapur, Allahabad, Bhadohi, Varanasi and Jaunpur. Agents of the industry visit the area and contact the parents of the prospective child labour. They pay some amount to the parents and take the children away to UP. There these children are kept for a year or so, as trainees with very low wages. Only after they acquire the skills of the trade are they entitled to salaries. It is difficult for

the parents to contact the children although the money flow is regular, through the agents. Hundreds of such children have been rescued from these districts and attempts made to rehabilitate them in other trades, but with marginal success. (See box – Exploitation of Child Labour Never Ends)

dhabas, which is as tiring and bothersome as carpet-making. There is no social movement in the country for the benefit of the children employed in the unorganized sectors. Most of the social action on child labour was directed toward the carpet industry and after the children were first withdrawn from there, it ended.

Exploitation of Child Labour never Ends

"There were five districts in Uttar Pradesh where children from our areas used to go for weaving carpets. These districts are Bhadohi, Varanasi, Allahabad, Jaunpur and Mirzapur. We have our offices in all these districts. Sometimes the children who go from here to work there are not traced because they are under strict surveillance of the employers. When approached by parents of such children, we contact our field offices in these districts, which in turn, are in constant touch with the Labour Commissioner there. On getting some clue about the child, a magistrate is appointed with the help of the Collector to conduct raids. We used to keep the freed children in Mukti Ashram or the Bal Ashram where they were imparted training in various trades. Having completed their training, these children were free to go back to their villages or any other place of their liking for employment. The government and our organization used to arrange some capital for these children. By this time, they had grown to the point that they could look after themselves.

For the past few years, the guardians of these children have started getting a grant of about Rs. 20,000 from the government. For SC/ST children, this grant is to the tune of Rs. 26,000. The state government contributes Rs. 10,000 and the balance comes from the central government. For the freed children, there is a provision of free education and a scholarship of Rs. 100/per month under the National Child Labour Plan. They are also entitled to a mid-day meal in the schools.

However, it is a fact that the children used to contribute to the family income by way of working in the carpet industry in Mirzapur, etc. Their parents also used to approach us only if they were not traceable or if there was some other emergency. If the child is brought back, it reflects on the family income and that is the reason that the parents never tell us about their children even on repeated requests. They are opening up only after this grant has come into existence. They are lured by this lump sum amount.

Local employment is not available. Those who could somehow establish themselves in Delhi in vocations like, say, welding, tailoring or a petty trade are standing on their feet but all are not so lucky. Such children have started going to Punjab and Haryana with their fathers where they get engaged in small works like guarding the fields and irrigating farms The parents get a one time payment ranging from Rs. 10,000 to Rs 15,000 which helps them a lot.

Exploitation of child labour is a never-ending process. Unless local production processes are back on the rails, it is impossible to tackle unemployment. Child labour is bred out of overall unemployment and there seems to be no solution to it, at least for now. Now women have also started migrating along with their husbands. That probably is a compromise so that the husband does not go out of bounds. There is no other alternative. We tried to check migration of children but now the whole family is migrating.

— Narrated by Ghuran Mahato, State Convenor, Bachpan Bachao Andolan, Saharsa.

Ghuran Mahato, the state convenor of Bachpan Bachao Andolan, is right in saying that this exploitation of child labour is a never-ending process. It is a deep-rooted evil in our kind of set up. When the children are brought back from the carpet belt, there is no alternative employment available for them. They are forced then to work in agriculture competing with their elders and bringing down the wage rate for them. The other course left for these children is to work at roadside

9.8 Health Services

The less said about health services the better. The problem resembles the schooling of children who cannot reach the school and even if they do reach, there is a building but there is no teacher. In Saharsa, there are 152 Health Sub-Centers (HSC). A list of the HSCs in the four worst floods hit blocks of Saharsa district is given in Table 9.1

Table 9.1

Health Sub-Centers and Additional Primary Health Sub-Centers in the Four Worst Flood Hit Blocks of Saharsa District

Nauhatta	Mahishi	Salkhua	Simri Bakhtiyarpur
1. Hati	Kundah*	Kabira Dhap*	Belwara
2. Partaha	Telwa*	Bhirkhi	Kathdumar
3. Trikhutti	Bhelahi	Chanan	Dhanupara
4. Naula	Birgaon	Alani	Ghoghsam
5. Narayanpur	Gandaul	Bhelwa	-
6. Rasalpur	Manuar	Chiraia	-
7. Darhar	Arapatti	-	-
8. Bakunia*	Aina	-	-
9. Asai	Sirwar	-	-
10. Barahi	Dhanauj	-	-

- indicates no sub-centre

* *Additional Primary Health Sub-Center*

The normal manpower attached to an APHSC consists of two doctors, a compounder, a nurse, a dresser, a health educator, a clerk, a lab technician and 2 Grade IV employees. The HSCs employ one nurse, a basic health worker and a family welfare worker. A doctor visits the HSCs by rotation on fixed days.

A doctor or a nurse is rarely seen at the centers in interior areas. Medicines are not available and the buildings often lie abandoned. Villagers of the area rely more on quacks for medical services than on doctors at the health centers. Should someone fall sick in a village located within the embankments, it is very difficult to take him/her to a doctor. One has to cross at least two streams to reach the embankment from where a vehicle can be arranged to take the patient to the nearest town. Arranging a vehicle at the embankment is an ordeal in itself and one has to physically reach a jeep owner for providing the transport and pay heavily if the person agrees. Should one strike water anywhere on the way, a boat is needed and getting it is not certain. The embankments are made of earth and their crests are full of ditches. In certain lengths of the embankments, brick on edge soling is done but that makes them even worse for vehicular traffic. There is a plan to blacktop these crests to give them the shape of regular roads but one does not know when these plans will be implemented. Having arranged the vehicle, one can reach a town but whether one will find a doctor still remains questionable.

Any medical assistance is procured only under these trying circumstances and it is sheer luck if the patient survives at all. The situation takes a turn for the worse during the rainy season when even experienced boatmen refuse to cross the river due to its current. In the case of snakebite, quite a common event during the flood season, death haunts the victim as the well wishers try to arrange for the transport. Authorities at the District Hospital in Saharsa claim that they are equipped to tackle cases of snakebite provided the patient is brought to the hospital. Whether the patient can be brought alive to the hospital is a million dollar question!

Leave alone emergency situations, the available health services are of little use to the local population even in normal conditions. Media reports suggest widespread prevalence of dreaded diseases like malaria, TB and kala-azar. But the local health services infrastructure is incapable of handling them because of the apathy of the medical staff and the lack of medicines, equipment and laboratory facilities. Kala-azar is a particularly difficult disease for the health authorities because its symptoms resemble that of malaria initially and much time is lost in treating for malaria. By the time kala-azar is identified as the disease, it is often too late. Non-availability of medicines and the high cost of treatment are other obstacles in getting proper care.

Health services also fail miserably in reaching the affected population during and after floods when diarrhea, dysentery and typhoid acquire great proportions. No service is better than uncertain service is the lesson that the people have learnt the hard way. Quacks are the only certain medical option in the area and they largely bear the burden of providing health services.

Ambulance in flooded areas

Migration - The only salution

9.9 Migration

A large area and its population are trapped by the embankments. Subsequent waterlogging in the protected areas converted big farmers into relatively small farmers and further dislodged people from gainful employment on the land, driving them from their homes and hearths. With the shrinkage of local employment opportunities, people started migrating in search of employment elsewhere. This exodus started since the beginning of the projects in the early 1960s. The earlier destinations used to be toward the east to Kolkata, the coal belt of West Bengal and tea gardens in Assam. Political unrest started in the mid 1960s in West Bengal. In the late 1970s the labourers started moving towards Punjab and Haryana as the results of the green revolution became visible. The construction boom in Delhi at the time of Asiad (1982) attracted many Bihari workers and thereafter they spread all over north India. A sizable number of Bihari masons are working in Uttarakhand these days.

Now Bihari labour can be seen in west and south India also. They are engaged in all sorts of jobs, from textiles work and diamond cutting in Gujarat to stitching sacks in Tamil Nadu, as industrial workers in Maharashtra to road builders in Himachal Pradesh. The fame of agricultural achievements of Punjab and Haryana would fade but for Bihari labourers. Remittances of this work force keep Bihar's economy alive and kicking. According to some crude estimates, Bihar received Rs 800 cr rupees through money orders in 2000-2001. It is estimated that an equal amount of money must have come through banking channels. The state receives about Rs 2000 cr through hawala channels from abroad. Thus, the total remittances shoot up to Rs. 3600 cr and that compares favourably with the annual state budget.

There is no authentic information available about the number of migrants from Bihar, their frequency of travel, the kinds of jobs they do and their contribution to the economy of the host state. In the absence of such data we can draw inferences from a recent survey (December 2003) conducted by Barh Mukti Abhiyan in three villages located within the Kosi embankments. These villages, Parsauni, Lilja and Gopalpur Khurd are located almost at the center of the Kosi embankments (Fig. 4.1).

Parsauni and Lilja had been given rehabilitation sites in Balthi village, located west of the Western Kosi embankment. But the sites are waterlogged. No one from these villages went to those locations. The residents of Gopalpur Khurd were given a rehabilitation site in Bijalpur that is located east of the eastern embankment. The actual land here was far short of the allocated land and only two persons from the village went to stay there. All the rest stayed back in the village. Till 2007 Gopalpur Khurd was eroded 11 times since the construction of the embankments. Agriculture in these villages has suffered immensely and most of the people purchase grains for their consumption. They remain engulfed in water for about four months a year and those living outside the embankments do not seek grooms here for their daughters. This is despite the assurance that the daughter-in-law will not have to go through the rigours of agriculture as the production process has come to a standstill and that kerosene oil, and not the agricultural fuel, will be available to her for cooking. Schools and health centers are not very far away from these villages but no doctor, teacher, postman or even a revenue inspector visits them. Most of the villagers plead that if the government could grant them the status of Scheduled Caste or Tribes, they would be able to look after themselves. The entire area is consigned to the mercy of nature and God.

Table 9.2 indicates that on an average more than one person migrates out of every family, the highest being in Parsauni, followed closely by Lilja. Most of the workers migrating to Delhi said that they sell fruits and juice in Delhi while those going to Punjab and Haryana worked in agriculture. The migration to Punjab and Haryana takes place during their sowing,

Table 9.2

Some Details of the Surveyed Villages

Village	Parsauni	Lilja	Gopalpur Khurd
Block	Madhepur	Madhepur	Supaul
District	Madhubani	Madhubani	Supaul
Distance from Eastern Embankment	9 km	8 km	4 km
Distance from Western Embankment	2 km	3 km	7 km
Rehabilitation Site	Balthi	Balthi	Bijalpur
Total Number of Families*	202 (30)	63 (17)	89 (19)
Landless Families	80	-	22
Population Total	1656	491	596
Adult Male	475	130	153
Adult Female	427	107	150
Children 0-14 years	754	254	293
Literates	203	85	92
School Going Children	NA	67	59
Child Labour	6	2	7
No. of Migrant Workers	278	72	86
Destination			
Punjab	186	66	43
Delhi	64	4	37
Bhadohi	28	1	4
Siliguri	0	1	0
Mumbai	0	0	1
Patna	0	0	1

*The figures in bracket indicates the families where no migration has taken place.
*NA = not available
Source: Barh Mukti Abhiyan Survey 2003.

transplanting and harvesting seasons. The migrants switch over to other jobs when free from farm work. Those working in factories, and their number is very small, are not subject to the seasonality of farm employment. With such a massive migration taking place from the area, it becomes difficult at times to find young men in the villages.

Local moneylenders finance most of this migration with interest rates varying from 5 to 8 per cent per month. It touches the 10 per cent mark in the case of emergencies. The interest rate varies from village to village and the repayment history of the borrower. It also depends on the destination. Interest rates for financing a trip to Bhadohi, for example, are the lowest and those migrating to Punjab pay the highest rate of interest. Women also take up jobs locally to supplement the family income. Earlier the remittances came through fellow villagers or post offices. Postal authorities used to take advantage of the money reaching the post offices and unofficially loaned the money on interest before the money order was cleared. With improvements in the banking systems, bank drafts are slowly replacing money orders but accessing banks is a tough job because of the distances involved.

Migrant labourers make their living in the host area and send money for the family members. Any delay in sending money encourages the moneylender to build pressure on the family members for repayments and till such time as the repayments are made, the family members are under obligation to work for the moneylender almost free of cost. In case the migrant labourer does not send money for any reason, the moneylender first eyes the land of the family and then other belongings. There are many families in the villages who possess all the necessary tools for agriculture and fisheries like bullocks, cows, ploughs, threshers and fishing nets, etc. but all that belongs to the moneylender and not the families, who just provide free labour. The moneylender often takes a trip to his clients in their working areas. The cost of the trip is borne by his 'subjects' who are also under obligation to give him gifts and cash offerings when he visits them. All these expenses do not form a part of the repayment package.

The parents of a borrower may not always be able to bear the shock if land is attached in any way and die a slow death. The wife leaves for her parents' home with her children and often gets remarried. Such liaisons get social sanction. The position of children becomes precarious under such circumstances. These 'children of two fathers' are unwanted by both the families and fall into the trap of 'agents' who lure them into 'child labour' outfits. A family breaks in this manner. There are instances when the migrant gets married at the other end, which also leads to similar situations. The wife suffers in either case.

The *mukhiyas* of the Panchayats used to issue an identity slip to the migrants in earlier days but the system was withdrawn later. The exploitation of the migrants starts from the beginning of the journey itself, in the absence of identity slips. Punjab police men harass them and ask for their identification slips. The rush for the photo identity card issued by the Election Commission is for this simple reason. It is reported that the police hassle those returning from Punjab on the plea of identification and extort Rs. 120/- to 150/- per person if they fail to establish their identity. Even after the identity is established, faults are found with the tickets held by the passengers and more money is extracted. The railway men and the Government Railway Police (GRP) also repeat the exercise and the ordeal continues till Barauni. All this happens only on the trains coming to Bihar because the police and the railway men are well aware that the labourers possess money only when they return to their homes.

The migrant farm labourers, generally, do not have any complaints about the treatment they get from their employers in Punjab or Haryana and maintain that they are well looked after there. They, however, suggest that the tea that they are served by the employers contains opium and they are made to put in extra hours of work. They do not mind this since they live alone there and do not have anything else to do. This is not intended to dilute the sufferings faced by the migrants as there are instances where such labourers have been killed at the hands of extremists for no fault of theirs. They have been killed while traveling on the roofs of trains. They have also been killed in landslides while working on roads in border areas. They are often ill-treated in the host states just for being Bihari. Recent incidents in Maharashtra, Andhra Pradesh and Assam are indicators of these events. Back home, the migrant labourer is often called a 'Punjabi' and can be identified very easily by his accent and behaviour. He often becomes a target of local ruffians who do not mind extorting money from these 'Punjabis'.

One problem that is likely to appear for aged migrants is that when they are not able to work, they want to return home. At such junctures, however, they are not always welcome. A weak and non-earning elder slowly begins to lose his position in the family. Their returning home means that they may ask for their shares in the ancestral properties and would have enough time to assert their rights.

9.10 Communications and Anchoring of Boats

Communications within the embankments and with the outside world have always been a problem. There is no road within the embankments and only tractors and motorcycles can ply on the *kuchcha* roads that exist there. Most of the trading within the embankments takes place with the help of mules. During the rainy season when the river waters spill all over, communication by boats become slightly easy if the main channel of the river can be negotiated. Traveling upstream, these boats need to be dragged with the help of ropes. Where water is shallow, they have to be both dragged and pushed. The Kosi flows in braided channels within the embankments and one has to cross these streams on boats many a times, at least, during the rainy season. During the dry seasons, boats are needed at least at one point to cross the mainstream. The other channels can be waded through.

When the embankments were built in the 1950s, the government had promised farmers free access to their fields from their rehabilitation sites. This, however, has not happened and the residents of the villages within the embankments have to pay for the boatmen's services. They have to pay the boatmen for transporting their agricultural produce even if it is brought back home. This cost has been thrust on people living within the embankments and there is lot of resentment against this. One has to pay the cost of transshipment to the boatmen even if one is using one's own boats and labour. This makes the agricultural produce costlier and many people in the lower reaches have ceased to grow grains as the boatmen are too ruthless in extorting money from the farmers. Matters do not end just there. Even if a person brings his own self-rowed boat to the *ghat*, he is supposed to pay the ghatwallas if he chooses to pass through the *ghat* or anchor his boat there.

The other side of the story is that the District Board awards the contract of transporting people on particular *ghats* to bidders. In 2003-04 Baluaha *Ghat*, some 4 km north of Mahishi in Saharsa district, was auctioned for Rs. 700,000. This is a huge sum and unless the contractor collects this money ruthlessly, he will run up losses. The real question is whether it is ethical on the part of the government to entrap people within the embankments and then force them to pay for crossing the river. It may be fair to levy such a tax on visitors or traders transporting materials within the embankments or taking grains outside for commercial purposes but the local residents should be spared from making any payment.

9.11 Criminalization

The area between the embankments is a heaven for criminals for it is virtually impossible for law-enforcement agencies to keep track of the criminals there. The Kosi offers an effective link between the Ganga and Nepal and the local people suggest that a lot of illegal transport of contraband and spurious articles takes place through this route with the full knowledge of police authorities. Various gangs of criminals operate through this area and the inaccessibility helps them in carrying out their designs. Organized looting and dacoity are common occurrences.

In an incident on December 4, 2003 near Baluaha Ghat in Saharsa district that involved dacoits involved a boat carrying the Chairman of the Kosi Pirit Vikas Pradhikar, who also represented the Mahishi constituency in the Bihar Vidhan Sabha, The dacoits had parked their motorboat on the western (Bhelahi) side of the river, minutes before the Chairman was to cross the river. After the boat carrying the Chairman and many others sailed into the river, the dacoits chased their boat midstream and took away the belongings and cash of the travelers, including the watch and cash of the Chairman. It is reported that they had not targeted the Chairman and his presence in the boat was only incidental. The looting continued

till the boats reached Baluaha Ghat and the looters, armed with sophisticated firearms, alighted from the boat and looted the waiting passengers there. Sensing trouble, the guards at the *ghat* ran away from the scene. The dacoits then sped away in their motorboat. Since the incident involved the Chairman of the Kosi Pidit Vikas Pradhikar who enjoyed the status of a cabinet minister, police arrived within ten minutes of the incident and an officer gave chase to the fleeing boat on his motorcycle but it was too late. He tried to cross the river at Mahpura Ghat, about 6 km downstream, but the boatmen had deserted that *ghat* too, so no boat was available there. The officer returned to Baluaha Ghat and the chapter was closed.

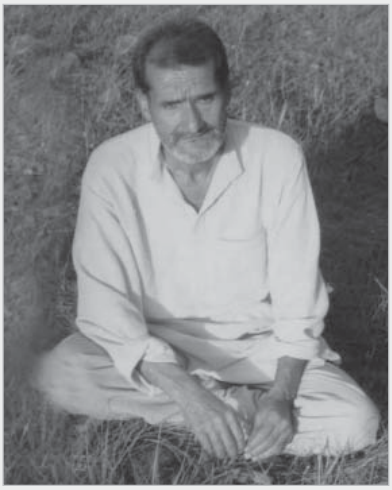
A similar incident had occurred four years ago at the same spot. People are demanding a police outpost at Kothia, on the western bank of the river opposite Baluaha Ghat, to prevent such incidents in future. That, however, is not the solution because there is a limit to the number of outposts that can be set up. Some years ago, three engineers of the Water Resources Department of Bihar were kidnapped near Pachbhinda (Saharsa) and one of them died in the melee.

9.12 Rehabilitation Sites

Most of the rehabilitation sites, though located outside the embankments, are generally waterlogged and in poor shape. A few families are always found living there because they do not have any other choice. Some of the sites are auctioned annually to prospective farmers by the government for farming but a sizable portion of the sites is captured by encroachers. (See Box: Rehabilitation Sites Up For Grabs)

While this is a story from someone living outside

Rehabilitation Sites up for Grabs



Three different sites were acquired for rehabilitation in my village. The northernmost site measured 10.5 hectares and evacuees from Kothia, Thuththa, Khojraha, Arapatti and Murli were to be resettled there. The second location was close to Mahishi village and measured 6.5 hectares. Brahmins from Arapatti were settled on this land. There was a very popular Congress leader from Arapatti and his influence led to the allocation of this plot to Arapatti. It was the property of the British indigo planters and after their departure, the ownership passed on to the Brahmins of Bangaon. When the eastern embankment was constructed, the government took it over for resettlement. Some 20 families are still there on this plot. Those who decided not to come and stay here handed over their plots to others with the land rights. This was, probably, the best plot in the entire Kosi Project that was acquired for resettlement.

The southern resettlement plot was about 30 ha but nobody turned up to live on this land. Those who tried to stay here left later, due to waterlogging. Out of these 30 ha, the government transferred 10 ha to itself and this is where we have the Block Office, the Kosi Project Office and the *thana*. Through the good offices of Lahtan Chaudhary, the remaining land was settled in the name of some landless Paswan families. It took about 35 years, 1966 to 2001, to complete this process. In earlier days, the government used to lease land to farmers on an annual basis at Rs. 70 per acre. Anybody could rent this land and big farmers generally used to corner most of it. This led to a persistent conflict between the resettled families and the landlords because differences arose frequently on grazing and right of way issues. Slowly, the resettled people became aware and they fought for their rights over the land and the annual allotment of the land became exclusive to them.

Suddenly in 1991, a local political worker got 14 acres of land in his name by paying Rs. 1,000 per acre as the lease amount with the help of the bureaucracy although he was not an evacuee. He rented some more land from the southern rehabilitation site also. This led to a conflict between the traditional leaseholders and the new lessee. The dalit residents at the southern site did not allow him to occupy the land there and when conflict broke out the police was called in. Sowing was done here by the traditional leaseholders but the new lessee did not want that to happen and uprooted the crops. There were frequent confrontations and once the agents of the political worker set on fire the house of a widow. Fortunately no lives were lost.

Cases and counter cases were registered from both sides and many a times the evacuees were lodged in jails. After a long tussle the land was leased out to them once again in 2003. I sided with them and was detained in the local *thana* for a few hours. Cases were lodged against 13 persons, including 6 women, for disrupting peace. I am also an accused under sections 144/323/341 and 504 of the Indian Penal Code and bail has been granted to me. The case has not yet been heard.

— Narrated by Rajendra Jha, V.& PO Mahishi, Saharsa district

the embankments, what happened to those living inside that were granted rehabilitation sites is also very revealing. (See Box: This is the Rehabilitation Package We Got)

This is the Rehabilitation Package We Got

My village Chanan Siswa had four hamlets. The easternmost hamlet was Nabtolia, with Dengrahi on its west. To the south of Dengrahi lay Siswa and Chanan was on the extreme west. One stream of the river used to flow between Nabtolia and Dengrahi-Siswa and another stream between Chanan and Dengrahi-Siswa. One had to cross another channel of the Kosi, west of Siswa, to reach the main river. Almost all the villages had ponds and ditches. We had rivers all around us but never faced erosion earlier. This started happening after the embankment was built.

In 1970, the main course of the river started flowing between Chanan and Siswa and eroded Chanan that year. In 1971, the river started flowing north of Siswa and eroded Dengrahi. After these erosions, the residents of Chanan moved to a rehabilitation site. Dengrahi was located at an inconvenient distance from the embankment and hence its residents preferred to live on a marginal bund inside the embankments. When that was also eroded, they moved to the other side of the river in the south but did not go to the rehabilitation site. The residents of Nabtolia stayed for some years at the rehabilitation site but left after it got waterlogged. Some of them went to the old village and the others built their huts on the embankment itself. All the four hamlets were granted rehabilitation in Kathghara village where you are sitting at the moment. This site accommodates some 70 families and about 150 families live on the embankment. There may be 30 or 35 families of Siswa on the embankment and the remaining occupants are from Nabtolia. Residents of Chanan and Dengrahi are back to their respective hamlets. Some 150 families of Siswa are also living in the original village, within the embankment. That is how we are placed today. The government threatens to evict us from the embankments but where will these 150 families go? They are not in a position to return to the rehabilitation site nor can they go back to the original village. No one else will allow them to occupy his land. The government has no answer to their problem.

We came face to face with poverty in 1970, for the first time, with erosion setting in. Before the construction of the embankments, we practiced mixed cropping of green gram, maize and paddy that was sown in February or March. It is still the practice at many places. Green gram was a certainty as it did not take more than 70 days to mature and the paddy yield was also very good. Maize was doubtful in the sense that it was highly susceptible to water and in the case of early floods, maize was lost. Two quintals per bigha (1.75 bigha makes a standard acre, i.e., 0.4 hectare) of green gram, 4 to 5 quintals of maize and 8 quintals of paddy was the usual yield per bigha. Labourers from outside used to come for harvesting paddy. Dasharia, Barogar, Bakol, Kasahan, Belaur, Dabra, Barhari, Jagarnathia and Dhusari were the common paddy varieties that used to grow under different depths of water. Dasharia needed the maximum depth of water for its growth.

During the rabi season wheat, horse gram, cowpea, khesari, oil seeds, raincha, and mustard used to grow in abundance. We used to broadcast the seeds and just harvest the mature crop. Ploughing and irrigation were not needed; ground moisture was enough for the crops.

Barring Musahars and dalits, almost everybody owned cattle, which these castes have also started keeping of late. Their lot has improved by working in Delhi, Punjab etc. but not due to any improvement in the local economy. The lands of erstwhile zamindars are slowly slipping into the hands of these migrant labourers. Money lending, too, is getting decentralized. Earlier, we used to borrow grains and money from the landlords of Sardiha village but they are now available within the village. One can see some *pucca* houses being built by these labourers with the money brought from Punjab. The availability of labour has decreased because of the migration factor and that has landed local farmers in a soup. They can neither farm their land nor can they ignore it. There is sand casting inside and waterlogging outside the embankments. You have to do farming on whatever land is available to you and that too without labour.

There has been a marked reduction in the cases of children going to Benaras or Bhadohi, the carpet belt of Uttar Pradesh, because of the movement against child labour. These children have started farming. Those sympathetic to the children's cause took interest only till their return from the carpet belt. Their obligation to the children ended with that. They don't shed any tears when these children work in the fields or roadside hotels. Apart from this, the population pressure will compel the children to resort to such works. You need a very strong political will to keep children away from work.

There is only one high school, located within the embankments, in the two blocks of Salkhua and Simri-Bakhtiyarpur at Kabira Dhap village. The government does not recognize this school and the education level crawls in our area. The status of health services is similar. There is one dispensary at Kabira Dhap but there is no doctor. A homoeopath sits there sometimes. There is another dispensary in Belwara where a doctor comes occasionally. In the health sub-center at Chaurahi, the grazers keep their cattle. This is our rehabilitation package.

— Narrated by Brahma Deo Chaudhary,
Village Kathghara Punarbas, PO Bhabdeva via Chapram, Saharsa district

Health centre at Chawrahi - resting ground for Cattle

9.13 Where is the Much Wanted Relief?

As one approaches the local block offices for maps of the block and the areas affected by floods in the concerned block, all the villages located within the embankments are marked in a different shade. Ask any official of the block office about the difference and he would tell you that no development work is possible within those villages. Even if something is done in one season, it will get washed away in the next. The area enclosed between the western embankment of the Kosi and the eastern embankment of the Kamla is marked free of floods. This is the area that suffers the worst floods because of drainage congestion. Some villages from within the Kosi and the Kamla embankments are given rehabilitation sites there. Obviously most of them have abandoned the area. Often, the establishment questions their entitlement to relief, as they are not living in places where they are supposed to live.

There can be an endless debate over who is entitled to relief and who is not, but there is provision for relief for people affected by floods. This is a provision for all those living below the poverty line and also for those who need help during floods. These provisions are:[6]

i. Every flood-affected family is entitled to one quintal of wheat to be disbursed in four weekly installments of 25 kg each.

ii. Every flood-affected family is entitled to 5 km of horse gram and a kilogram of salt during the same period.

iii. For people taking shelter on the embankments, there is provision of readymade food (sattu/chura/gram and salt) or a cash dole of Rs. 50.

iv. Provision for Rs. 200 per family for spices, oil, matchboxes and a kilogram of onions.

v. In the event of the death of a person due to floods, the kin of the deceased are entitled to a compensation of Rs. 50,000 subject to certification by the collector that the death has been caused by floods. This grant has been up scaled to Rs. 1,00,000/- and the Chief Minister's Relief Fund also adds another Rs. 50,000/- per case since 2007.

vi. For people living below the poverty line there is a provision of housing assistance on a priority basis under the Indira Awas Yojana.

vii. Provision of Rs. 200 per family for fodder purchase for the cattle.

viii. Provision for treatment and medicines against diseases due to floods and also for treatment of snakebites.

ix. In case of distress, opening of cheap bread shops at the block level.

x. The boatmen employed in rescue and relief operations are entitled to a payment of Rs. 70 per day.

This package is only a provision for the distressed people, it is not an entitlement. Consequently a sizable part of the affected population does not get any help.

The role of the state and the central governments in relief operations is discussed in Chapter 10.

9.14 Erosion

Excessive sediment load in the rivers causes meandering and erosion is an outcome of the meander of rivers. Such erosion is taking place all along the Ganga and its tributaries since ages and will continue in the future also. Its impact is felt almost all along the rivers of Bihar but it is more acute within the embankments. More and more people are added to the list of uprooted persons every year with nowhere to go except the embankments or other higher grounds like railway lines or the berms of canals over which they do not have any legal rights. They always fear eviction and live under sub-human conditions at these locations.

Digambar Mandal of Khairi village, in Madhubani district says, "Basipatti village of Madhepur block, located between the Kosi embankments, was eroded twice within three years. It was spread over 2200 acres of land of which 1400 acres were consumed by the river. There are about 1800 Yadav, Mandal (Khatabe), Nonia, Musahar and Muslim families living in this village. About 800 acres of land is left and the rest eroded by three different channels of the Kosi that encircled the village from all sides. This village was given a rehabilitation site outside the eastern Kosi embankment in Kharail Parsa village. Given the distance of the rehabilitation site from the agricultural fields, nobody went out there. In the aftermath of the erosion, some 85 families moved south, another 93 families shifted east, 111 families moved to the northern side of the village and 59 families found some space between the river and the western Kosi embankment. Some 155 families are literally on the streets in the village with no living space. The river has become so deep between Basipatti and Bhagta that dolphins appeared there...while the government is silent over the entire episode; resettlement has taken a new shape within the village. Those who have become landless following this erosion have taken land from those who still have some land, with an unwritten lease of Rs. 300 per year. Only time will tell, how long this arrangement will last. The government takes the stand that these people are already resettled and hence it will not do anything for them. The erosion victims argue that when the government recognizes the existence of these villages by providing ration shops, health centers, and polling booths, why should it shy away from properly rehabilitating them? What will happen to their livelihoods, they ask? Obviously, employment in Punjab, Haryana or Bhadohi is now an accepted solution for one and all."

Villages Gnawed by Rivers

Bowing heads before rising bed level of the River

Dev Nath Devan of Sunder Birajit in Madhubani district has a similar tale to tell, "Some of my land is located in Barmotar village Harri *mouza* in Marauna block. There was no flood in the Kosi in 2005 and 2006 but there has been tremendous erosion over this period and villages after villages are getting eroded. Khokhnaha was a village with 2000 families but it does not exist anymore. Bhagawatipur, Pachgachhia and Murkiahi have also vanished. Bhagta in the south of Madhepur block is also counting its last days."

The government has, however, a provision for allocating government land for housing purposes to those who become landless or indigent because of erosion. If no government land is available, there are provisions for acquiring land and transferring it to erosion victims if they are landless or have become so. Those who are not indigent but have lost their houses due to erosion can get land from the government but have to pay the price for the same and that too, in advance. It will be interesting to survey the people residing along the riverbanks to ascertain how many landless and indigent people have been given land by the government as also to know how many people have taken the help of the government by paying the price of the land. Wherever the uprooted people have put up a determined and sustained fight they have got some concessions from the government, otherwise they are forced to live on encroached land under the threat of eviction at any moment.

9.15 The River is unable to Drain its Catchment

The basic function of a river is to drain the water from its catchment but the bed level of the rivers, trapped between the embankments is rising and once there is a breach in the embankment, it becomes very difficult to push the river back into the embankments because of rising levels there. A cubature study of the Kosi was done by Indian Institute of Technology-Delhi in 1962, immediately after the completion of the embankments followed by a similar study in 1974. The changes in the bed levels in different reaches of the river are given in Table 9.3 on next page.[7]

According to this study, the river is eroding its bed between the barrage and Dagmara but at all other places, the riverbed is rising. The rate of rise of the bed levels between Mahishi and Koparia, where the embankment ends, is 12.03 cm annually. During the past 45 years of existence of these embankments, the riverbed must have risen by 5.41 m at this rate. The embankment's height that was fixed in 1950s was almost the same implying that the riverbed has gone up by the same extent now. Obviously, the discharge

Table 9.3
Bed Level of the Kosi Immediately After The Construction of the Embankments (1962) And In 1974

Sl. No:	Reach of the River	Distance Km	1962 Bed Erosion Mm/yr	Sand Deposit Mm/yr	1974 Bed Erosion Mm/yr	Sand Deposit Mm/yr
1	Chatra to Jalpapur	27	17.6	-	-	12.4
2	Jalpapur to Bhimnagar Barrage	15	165.6	-	-	107.0
3	Bhimnagar to Dagmara	26	35.6	-	8.3	-
4	Dagmara to Supaul	34	3.8	-	-	18.6
5	Supaul to Mahishi	40	-	95.6	-	63.5
6	Mahishi to Koparia	25	N.A.	-	-	120.3

Source: Ref. 7

carrying capacity of the river is decreasing year after year and it is only providence that the embankments are intact even today.

The 1988 annual report of the Water Resources Department suggested that the height of the embankments below Mahishi be raised by 2 meters (6 feet), saying that the 1987 flood in the state was a hundred year flood and that the embankments had to be raised by that height to accommodate such flows. The fact, however, remains that unless the embankment is raised by a height of 3.25 meters (in 1987), it will not be possible to accommodate the 25 years bed-level rise of the Kosi, the flow that the Kosi embankments are reported to be designed for. WRD of GoB is not in a position to answer such inconvenient questions. To put the matter straight, WRD was simply misleading the people and it is only the good fortune of the department that the river has not been ferocious in the recent past.

Is raising the height of the embankments any solution to the problems facing them? Will it in anyway reduce the discharge or the sediments coming between the embankments? Will it prevent the riverbed levels from rising between the embankments? Will there be any reduction in seepage through the embankments or betterment of the waterlogging conditions outside the embankments? Will any engineer guarantee that such raised and sturdy embankments will not breach in the future? The answer to all these questions is a big 'no'. The stronger and higher the embankments, the greater will be the risk to the population outside the embankments. Such an action would also put the population within the embankments at greater risk. Such simple facts are not understood by the people at the helm of affairs. Raising and strengthening the embankments can have one and only one benefit in the present context. They can improve road communication till the time they exist and that will permit movement of vehicular traffic on the embankments. For this, the embankments will have to be cleared of the habitations and it will be argued that all this is being done to control floods, because that argument always sells. All concerned parties, including politicians, engineers, administrators and contractors, have a vested interest in flood control. In the good old days, the local labourers used to get some employment at these works but now most of the earthwork is done by machines that are brought from outside the state.

When the riverbed rises, the tributaries of the rivers also find it difficult to discharge their waters into the main river. The embankment is threatened from that side also and a breach may be affected from that end too. The rivers thus enter an unruly phase and the responsibility for this behaviour of the rivers lies exclusively with those engineers and technocrats who choose never to question their political masters or their policies and continue to raise and strengthen the embankments without bothering about the consequences. One day these sturdy and high embankments will devastate the area and the people of the coming generations.

The embankment builders are proud that they have tamed the rivers but they are not interested in knowing the price that society has paid for it. In their rush to conquer the rivers, they have changed, if not reversed, the behaviour of rivers and they do not want to learn any lessons from that. That is a problem for the next generation of politicians and engineers. They have used the river and the people as guinea pigs.

9.16 Conclusion

Living conditions within the embankments, where the residents are deprived of all the civic amenities that are treated as basic necessities today, are a slur on any civilized society. People live there under sub-human conditions which unfortunately many people in Bihar itself are not aware of, not to talk of the world outside. Their plight is unbelievable and something needs to be done immediately for them. These are the people who sacrificed their interests to enable others to get some

protection against floods. It is altogether a different matter that such protection was neither desirable nor achieved but it resulted in suffering for over a million people.

Many engineers argue that crops have been protected outside the embankments and if they are fairly valued, the investments made on the Kosi Project will have been recovered. Land prices have gone up and new settlements are coming up in those areas of the old Saharsa and Purnea districts, which were once notorious as Kalapani.

This is a purely technical statement devoid of any human element in it. When one talks about the enhanced crop production and the paid up capital, one should also account for the 120,000 ha of land within the embankments over which crops have become uncertain for all times to come. Floods, erosion and waterlogging have hit almost double the land that was supposed to have been protected against floods. Over 380 villages and a population of about a million people residing in them have been compelled to live under sub-human conditions losing their flora and fauna, orchards, temples, mosques and other community assets. They are forced to live on money orders and relief.

The biggest loss is that the river has lost its basic character. It is supposed to drain its catchment but in this case the Kosi is spreading its waters back into its catchment, leaving large parts almost permanently waterlogged. By raising its bed level, the river has been deprived of its capability to drain the area. This loss is irreversible and cannot be translated into money value. When one takes stock of the costs and benefits, all these factors must be taken into account.

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10
Is There Any Solution?

We have so far studied various aspects of the living conditions of people in the Kosi basin. We have also seen the way flood protection schemes began in Bihar after Independence and their failure to fulfill their stated objectives. In an attempt to solve one problem, engineers and politicians have created many other problems that require immediate attention. The intended beneficiaries of the projects, in many cases, are much worse off than earlier. The question is, can something be done to improve the situation and if so, what can be done now and how? If there are some possibilities to improve their situation, they must be identified.

10.1 Flood Mitigation in the Kosi Basin

Governments have to be active on two fronts. They have to find a long term solution to the problems faced by the people during the floods and at the same time they have to protect the people during floods and ensure that the losses are minimized. Let us first have a look at what the government believes is a permanent solution to the floods problem in the Kosi Basin.

The government believes that the final solution to the floods problem faced by the people in the Kosi basin is the construction of a high Barahkshetra Dam in Nepal. Some information about the proposed Barahkshetra Dam is given in Chapter 2. This site and all other such sites for building dams in the lower Himalayas are located in Nepal and the prerogative for their construction lies with Nepal and not with the Government of India (GoI). Other factors delaying their construction have been discussed in Chapter 2.

When C. H. Bhabha made his speech in Nirmali, on April 6, 1947, he had very strongly advocated the case of the Barahkshetra Dam but the problems created by dams were not quite well understood then and environmental movements were almost unheard of in those days. Although the implications of submergence in the reservoir area were understood by all, the difficulties of rehabilitating the affected people, experienced later in almost all such projects all over the world, were not known then. Fortunately, India and Nepal had both shown an inclination to construct the dam. It was the most favorable time for taking up the dam construction. India had just become an independent nation and arranging resources for its construction would have been easier. Because of its international character, the central government had a major role to play in pushing the proposal. The state government had a limited role in the process but was going to be a major beneficiary of the project, if it was implemented.

Basically water is a state subject in India. In the case of flood control, it becomes imperative on the part of the state government to look after the well-being of the affected people till such time as permanent measures are taken. The central government may help the state government with some stop gap structural measures to provide succor to the people. It can also extend a helping hand in meeting relief and rehabilitation requirements. Thus the roles of the respective governments are clearly defined.

Ever since 1946 when the Central Government rejected the plan to embank the Kosi in favor of a large dam, the ghost of the Barahkshetra Dam has haunted planners, engineers and politicians. Jagadanand, the then Water Resources Minister of Bihar, asserted in the Bihar Vidhan Sabha on July 22, 2002, "Unless the discharge is controlled, scientists all over the world are convinced that floods cannot be controlled… Embankments do not control the discharge, they can at best prevent water from spreading. Weak embankments cannot hold uncontrolled discharge and floods will continue to bother us as a natural calamity. If we want to control floods in this state, we will have to control discharge in the upper riparian states and the neighboring countries. We have had negotiations with them and have unanimously agreed to proceed jointly."[1]

In the same context, in reply to a calling attention motion of Ram Bilas Paswan regarding floods in Bihar, Arjun Charan Sethi, Minister for Water Resources at the centre told the Lok Sabha, on August 22, 2003, "So far as Bihar is concerned, we are having constant interaction with the Government of Nepal because we

all know these rivers originate from Nepal. Unless we have any kind of agreement with Nepal, this problem cannot be solved. The proposal for setting up of the Joint Project Office in Nepal for taking up field investigations and preparation of (a) Detailed Project Report has since been approved. One hundred officials from Nepal and 42 officials from India are to carry out field investigations and studies. The project will *inter alia* have (a) 269 meters high dam with an installed capacity of 3300 MW and irrigation benefits accruing both to India and Nepal. In addition to (The) Kosi Multipurpose Project, it will include (the) Sun Kosi Diversion Scheme as well."[2]

A similar statement was made by Priya Ranjan Das Munshi, the next Central Minister for Water Resources, at Kishanganj on June 5, 2004.[3] Jay Prakash Narayan Yadav, Minister of State for Water Resources at the centre while talking to the press on June 24, 2004, in New Delhi said that a sum of Rs. 29 cr had been sanctioned for the construction of the Kosi High Dam. (He must have meant that it was for the preparation of the DPR.)[4] As far as the Barahkshetra Dam is concerned, politicians in India are consistently saying since 1947, that a dialogue is going on with Nepal. Jay Prakash Narayan Yadav reiterated his statement again in 2005.[5] A joint team is currently working in Nepal for preparing the DPR but its personnel are tight-lipped over what they are going to propose and when.

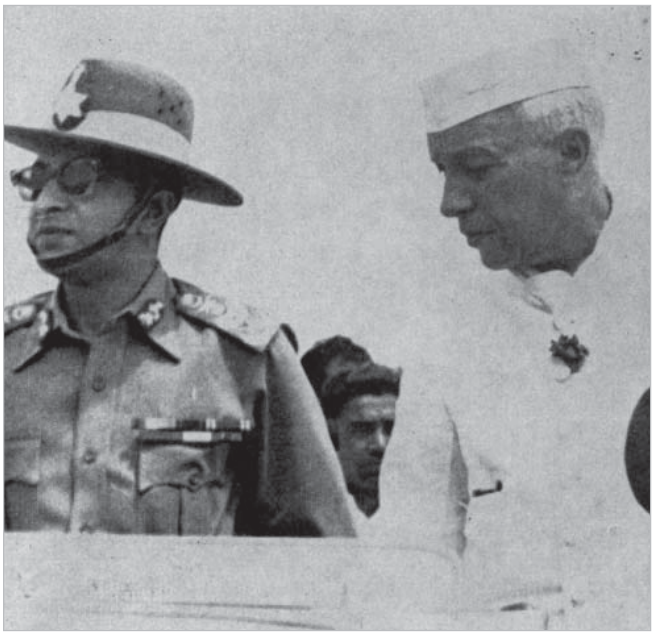
Such declarations are regularly made by central and state ministers since Bhabha's address at Nirmali in 1947, but even after a lapse of 60 years the text of the speech does not change. Politicians at the centre and the state wash their hands off any responsibility for floods in Bihar by referring to the continuing negotiations with Nepal. It is really intriguing; if the Kosi High Dam is the only permanent solution to the floods problem in the Kosi basin and it is beneficial to both the countries, why has India not been able to convince Nepal about the benefits of the scheme during this period and why has Nepal not responded positively.

10.2 Nepal's Concerns

Negotiations between India and Nepal concerning water and rivers started in 1910 when the British proposed a barrage on the Sharda near the Indo-Nepal border, to harness its waters for irrigating the Terai area of the United Provinces. This barrage was completed in 1928. A canal of 14,000 cusecs capacity was taken out from its right flank to irrigate areas in Uttar Pradesh. These canals were developed as the Sharda Sahayak canals after independence and were extended up to Mau district in eastern Uttar Pradesh. In continuation of these works, barrages were constructed on other rivers entering UP from Nepal on the lower Sharda, Girijapur, Sarayu, Lakshamanpur, Ban Ganga and Danda on the Indian side of the border to facilitate irrigation. Nepal is not comfortable with these structures and describes them as unilateral action by India. The Nepali civil society feels that it has led to a souring of relations between the two countries.

India and Nepal signed an agreement in 1954 to share the Kosi waters. It was revised in 1966 and despite the revision, Nepal feels uncomfortable about it. The same story was repeated with the Gandak agreement that was first signed in 1959 and revised in 1964. Despite revisions, there is a widespread feeling in Nepal that India has manipulated the waters of the two rivers and that all the benefits of the Kosi and the Gandak projects have gone to India. "The Nepalese continue to believe that they were 'cheated' while UP and Bihar allude to floods in their state being the result of Nepal 'releasing' waters."[6]

Nepal is not happy because along with the Bhimnagar barrage on the Kosi that is located within Nepali territory, it hoped to get another barrage at Chatra, 40 km upstream of the Bhimnagar barrage, which could have brought more area under irrigation there. The Chatra barrage, however, was not proposed by India in 1953. The younger generation in Nepal may not be aware that the Chatra canal on the east of the Kosi River was constructed by India at a cost of Rs. 15 cr and it was inaugurated by Nav Raj Subedi, Nepal's Minister for Irrigation and Power on September 7, 1970. Chandra canal, on the west of the Kosi, was constructed by India and this contribution too is



King Mahendra of Nepal and Indian Prime Minister Jawahar Lal Nehru at Kosi Barrage - 1959

forgotten. A similar feeling exists in the case of the Gandak Project also. Besides water there are other irritants also along the Indo-Nepal border and, it seems that Nepal wants to take all the precautions that it can in such matters and this causes delays.

The Mahakali treaty between India and Nepal (1996), although ratified in the Nepalese Parliament by a two-third majority, is also viewed with similar suspicions in Nepal. The main component of this treaty is the 315 m high Pancheshwar Dam which will hold 12.3 billion cum of water and produce 6480 MW of hydro-electricity. When this treaty was signed, it appeared that all the differences between the two governments had been sorted out for all times. There was a competition of sorts among the political parties to take credit for this agreement. But internal conflicts among the parties were no less dominant. The result was that the main opposition party in Nepal, United Marxist Leninist (UML), split into two. One part remained UML and the other was renamed as Marxist Leninist (ML). Both these factions rejoined each other following the elections of 1999 in which the ML was virtually wiped out.[7]

Nepali observers believe that in the Mahakali treaty, Nepal's share of the water had been defined but the treaty was silent over the Indian share. Nepali critics claim the clause *"without prejudice to their respective existing consumptive uses of the waters"* would entitle India to claim all the Mahakali waters in the lean season. Despite the ratification, later a Nepali Parliamentary subcommittee stipulated some conditions on the Mahakali treaty.[8] India believes that these modifications do not carry any weight as a treaty is either entered into or is rejected. There cannot be any intermediate stage that would make it conditional.[9]

After the initial enthusiasm over the treaty subsided, total inaction followed. There was a provision in the treaty to prepare the DPR of the project within six months of signing it. Twelve years have passed but no action has been taken on this matter. The most unfortunate part of this mistrust is that it has percolated down to the people's level and even if the two governments at some stage in the future agree to take up any ambitious joint venture, they will have to strive hard to convince the people of its benefits.

It is a fact that some 61 villages of Nepal, with a population of nearly 150,000, are trapped within the Kosi embankments in Nepal. It is also a fact that because of excessive sediment load, Nepal had to take up modernization of the Chatra Canal System and with frequent breaches in the Chandra canal, a sizable area of Saptari district in Nepal is facing a problem of sand casting on an unprecedented scale. The Western Kosi Canal is exposing the Nepali population to all the problems that their Indian counterparts are facing on the southern side of the border.

Coming back to the issue of Nepalese sentiments that all the 'benefits' of the Kosi and the Gandak projects have accrued to India, it will suffice here to say that the Eastern Kosi Main Canal only irrigates around 18-20 per cent (See Chapter 5) of the stated target and the Western Kosi Canal, that is still under construction, irrigates barely 8 per cent of the area it was expected to irrigate (Chapter 6). This canal had exceeded over 75 times the original cost of the project till 2008. We have also seen in Chapter 4 that the Kosi embankments remain a fair weather friend. The situation with the Gandak Project is no better. In this most waterlogged basin in Bihar, against a target of 1,153,000 ha, the Gandak canals irrigated only 388,000 ha, 383,000 ha and 368,280 ha respectively in the crop seasons of 2004-05, 2005-06 and 2006-07.[10] These canals are still incomplete, while over ten times the original estimate had been spent on this project till 1985 (completion of the first phase).

Then there is the case of around a million people trapped within the Kosi embankments (Chapter 8) who have not been rehabilitated properly till date. These 'benefits', however, cannot be made public by the government as they point towards many skeletons in its cupboard. Only concerned citizens or the victims of the project can reveal their hardships. A similar situation exists on the Nepalese side of the border, where the promised irrigation is not available and rehabilitation of the people is also not satisfactory. Thus people are suffering on either side of the border but the people of Nepal can very easily hold the GoI responsible for their hardships while their Indian counterparts can only blame their fate.

Land Locked Nepal

An important irritant in Indo-Nepal relations has been Nepal's demand for a trade route on the west coast of India so that it can develop an easy link with the western world. India had been maintaining that it had given Nepal a corridor through Kolkata and there was no need for another one. Besides, it was not customary to provide multiple links to a landlocked country. This issue was resolved in 1996 after the visit of the Nepalese Prime Minister, Man Mohan Adhikari, to India and India gave Nepal transit facilities on her west coast. Reciprocating this gesture, Nepal allowed Indians to make a study of the Kosi basin in Nepal to help make plans for the Barahkshetra Dam. It is reported that almost all the talks regarding the tapping of water resources between India and Nepal used to break earlier on Nepal's demand for a trading route on the west coast of India and the Indian team's refusal to accept it.

The atmosphere has changed following the 1996 arrangement and an Indian team has been based in Nepal since then. Nepal also wants a navigation route to access the sea directly through the Kosi-Ganga path and get linked to the Allahabad-Haldia National Waterway. These proposals are also being studied and negotiations are still going on.

10.3 Barahkshetra Dam Related Issues

The Seismicity Debate

The site for the proposed Barahkshetra Dam lies in a highly seismic zone in the Himalayas and is considered unsafe for the construction of such a large structure. This was the reason given by the state government to reject the high dam on the river in 1954 when it decided in favor of embankments (Chapter 2, Section 2.10). Some large dams have been constructed in Japan and Italy in the recent past and engineers cite their examples when discussing the seismic effects of dams and suggest that the matter is not as serious as it is made out to be. But the seismicity debate is far from being settled and it will pick up once the proposal to construct the Dam takes a serious turn. Till then, it is peace and harmony everywhere.

The Cost of the Dam

The proposed Barahkshetra Dam was estimated to cost Rs. 22,700 cr in 1998. It has probably more than doubled by now. The huge investment required may be constraining the two governments from starting work on the project. It may not be easy for them to raise the resources locally, although the GoI managed to raise funds for the Sardar Sarovar, Tehri and Subarnarekha dams. Bogged down by various controversies, the construction of these dams has suffered long delays.

At one time financiers wanted counter-guarantees from Nepal before advancing money and rightly so. Nepal was not in a position to assure that. Raising money for large capital-intensive schemes is difficult and without the support of financial institutions, it becomes almost impossible. These institutions would like to ensure the financial viability of the projects and their own profits. The market economy will push these institutions to insist on a price for welfare measures like flood control, etc. and charge the beneficiaries for the same. Irrigation costs will surely be passed on to the farmers on a commercial basis. Enforcing the canal and power rates will be difficult for the state. Besides, there has been no agreement so far over the price at which electricity will be sold to India and the consumption cost to the public. In the absence of such agreements, it will be difficult to assess the price that the Indian consumer will be asked to pay. News from across the border suggests that the consumer cost of the power produced in Nepal would be the same that the average American consumers pay in their country. If there is any truth in these rumors, it will be very difficult for the Nepali or Indian consumers to bear the cost. The role of governments in building mega-projects is reducing day by day and if the people are left to the mercies of commerce, one can well imagine their plight.

Progress at Snail Pace

About seventeen years ago, in 1991, the Government of India (GoI) and His Majesty's Government of Nepal (HMGN) had agreed to joint studies for quickly finalizing the parameters of the Sapta Kosi High Dam Multipurpose Project. A joint committee of experts was expected to finalize the modalities of investigations and the methods of assessing the benefits. The two sides were to start investigations to prepare a detailed project report (DPR) following the finalization of modalities. The HMGN provided the GoI with an inception report in 1993 and a Joint Committee of Experts was constituted in 1996-97.[11] In one of the meetings of the JCE, a representative of the Government of Bihar was also allowed to participate. It was then hoped that work would soon start on the preparation of the DPR. The 1999-2000 Annual Report of the Water Resources Department, GoB expressed its frustration by saying, "Despite repeated efforts, no significant progress has been made on the decisions taken in the January '97 meeting."[12]

The matter was discussed in the Prime Minister's Office in Delhi on October 16, 1998 and it was hoped that an office would soon be set up to work on the DPR of the Kosi High Dam.[13] Statements of the central ministers in 2003 and 2004, referred to earlier, were steps in the direction of preparation of the DPR as the staff strength to be deployed on this work was defined. Unfortunately it took 12 years to reach such a decision. As far as the state government was concerned; it was rejoicing that it had also been included in the Indian contingent that negotiated with Nepal. It could not do anything beyond that.

After the general election of 2004, a friendly government was constituted at the centre with the help of the ruling party in Bihar. The Minister of State for Water Resources at the centre issued a statement in Delhi on July 20, 2004 that a meeting of experts and officials of the department was held that day to review the proposed dam at Barahkshetra in Nepal. He further said that the centre had sanctioned the dam and that it had allocated a sum of Rs. 30 cr to open a site office of the same.[14] If he had really said so then he should

have been asked how the GoI could sanction a dam in Nepal? At best it could give sanction for the money needed to prepare the DPR for that project since the two governments had only agreed to that extent. Otherwise also, Rs. 30 cr may not meet even the cost of site clearance at Barahkshetra. Such assertions only console the people of Bihar if not add insult to their injury. They were repeated time and again during the floods of 2004.

At the bilateral level, some of the unresolved issues generic to all dams' projects proposed for Nepal, include: (a) The price of electricity is yet to be accepted by the buyer; (b) The benefits of the regulated water which may accrue from building reservoirs that submerge Nepali villages remain unarticulated and (c) Compensation for involuntary displacement and loss of livelihoods.[15]

Involuntary displacement of the people from the submergence area is going to pose many problems. Lands close to the rivers are prime agricultural lands and their submergence means a loss of livelihoods for the people, apart from the impact on their flora and fauna, cultural and archeological sites, forests and so on. Such involuntary relocation will take place in Nepal. The cost of the rehabilitation package in such a case will be very high and it will have to be paid by India when the construction of the dams is taken up in the future.

Issues of risks and benefits are central to all the proposals but the question of risk is poorly understood. How can the Nepali hydro-bureaucracy respond to these challenges of minimizing risks and securing maximum benefits for Nepal? A succinct view on the second issue says, "Having unsuccessfully tried to sell electricity, and viewed water and flood moderation only as secondary benefits, Nepal will find it draws more attention when the priorities and values of these products are interchanged. But with the threat of water scarcity in its most densely populated states looming large, the onus is on India to steer these negotiations in the right direction. For a start, it must acknowledge the key role Nepal will play in meeting the future water demands of North India and agree to put a monetary value on such stored water. It will be a disservice to both countries if India continues to count on her problems of floods and water scarcity being resolved by default. In that case, the wait could be endless.'[16]

Inaugurating a seminar organized by the Water Resource Development Centre of Patna University on March 2, 2002 the Water Resource Secretary of the GoB said that given the resources available with the government, there was no possibility of a dam being built on the Kosi at Barahkshetra in the coming 50 to 60 years. This seminar was discussing the floods problem of the state and was attended by the bigwigs of the state's technical fraternity, including many Chief Engineers of Bihar's Water Resources Department. The Secretary was not a politician and he may have been speaking the truth.

10.4 Interlinking Indian Rivers

A proposal for interlinking of Indian rivers (ILR) from the so-called surplus water states of northern India to those of the water-starved areas of south and western India was revived in October 2002 following a suggestion of the Supreme Court of India. The proposal prepared by the National Water Development Agency (NWDA) is of direct relevance to Bihar. Before analyzing the problems that may arise thereof, the basic proposal is briefly outlined here.

The ILR proposal claims that by linking various 'surplus' water rivers of northern India to the rivers of water-starved south and western India, most of the problems of floods and droughts in the country can be solved. There are two major components to this project. The Himalayan component envisages a number of links within the Ganga-Brahmaputra basin like the Kosi-Ghaghra, Gandak-Ganga, Ghaghra-Yamuna, Sharda-Yamuna, Manas-Sankosh-Teesta, Teesta-Ganga or the Brahmaputra-Ganga link along with the Sharda-Sabarmati link via the Yamuna. The Ganga-Subarnrekha-Damodar-Mahanadi is another link proposed that will act as a conduit for linking the Ganga to the southern rivers. In peninsular India, the Mahanadi, Krishna, Godavari, Pennar, Cauvery and Vaigai are the major rivers to be linked. This portion also includes the Ken-Betwa, Par-Tapi-Narmada and the Damanganga-Pinjal links. Altogether 30 links are proposed, 14 in the Ganga–Brahmaputra zone and the remaining 16 in peninsular India. The suggestion of the Court came during the rule of the NDA-led government at the centre and the UPA government is firmly committed to take up the project, estimated to cost Rs. 560,000 cr, at the earliest. It is suggested that such monies could be raised from internal sources within the country and that lack of resources would not be a problem in implementing the project.

Within India, however, a large number of knowledgeable people think that this huge sum of money, that may escalate to over Rs. 20,00,000 cr in the next 15 years, will have to be located in the international market and it will not be very easy to find it. A fierce debate is going on within the country over the feasibility, environmental implications and aftermath of this project. Bihar happens to be a major actor in the interlinking proposal and it would be of interest to know its stand vis-a-vis the centre's proposal.

4 The NWDA Proposal Concerning Bihar

Six links concern Bihar directly. These are:

1. Manas-Sankosh-Teesta-Ganga (MSTG) Link
2. Kosi-Mechi Link
3. Kosi-Ghaghra Link
4. Gandak-Ganga Link
5. Chunar-Sone Barrage Link
6. Sone Dam-Southern Tributaries of the Ganga (STG) Link

Thus, of the six proposed links, only two are related to the Kosi River.

We Will not Give Our Water to Others

After the plans were announced in 2002 and the GoI directed the implementation of the scheme, a meeting was called by the GoB to discuss its implications on the water resources of Bihar. This meeting was held in the conference hall of the Bihar Vidhan Parishad at Patna on April 2, 2003 and was attended by the Chief Minister Rabri Devi and the Chairman of the Bihar Vidhan Parishad along with many others including MLAs, MLCs and members of the civil society. Rashtriya Janata Dal (RJD) President, Lalu Prasad Yadav, said in this meeting that he would not allow 'our water' to go elsewhere because nobody would give water to Bihar when the state needed it. Brijendra Yadav, MLA (Janata Dal-United) raised a very pertinent point. He said, "The Brahmaputra, Ganga, Mahanadi and the Narmada Rivers are supposed to be surplus water rivers in the country but the states that are located in these basins are the most undeveloped states of the country. Bihar had water but the southern states were more developed than Bihar. If Bihar is not able to consume its water, it is construed that it is a surplus state. You think of a patient who has lost his appetite and cannot take food. Does it mean that he has surplus food with him?" The problem is, how do we define whether a river or a state is surplus in water or not? That question, however, is yet to be answered. Brijendra Yadav was not very far off the mark because utilization of water resources in the state had been really mismanaged.

Lalu Prasad Yadav repeated his remarks in his famous 'Lathi Ghumawan Tel Pilawan' rally in Patna, later on April 29, 2003 that he would not allow Bihar's water to go elsewhere. But in May 2003 he said 'this water is our petrol', implying that Bihar was ready to sell its water for a price and thus agreeing to river linking. He never pursued the idea later. The ILR issue was also discussed in the Bihar Vidhan Sabha subsequently with the treasury benches opposing it and the Bharatiya Janta Party BJP supporting it. The (BJP) even charged the state government with obstructing the process.

Bihar Responds to the NWDA Proposal

The RJD government led by Rabri Devi appointed an Expert Committee in July 2003 to study all the technical components of the NWDA proposal so that the interests of the state could be protected. The Committee submitted its report in December 2003 and said that, "Interlinking of rivers is the last big effort by the nation to harness water resources of the country for equitable distribution. Hence Bihar must not miss the bus at this stage and must ensure that the seasonal water requirements of its various sub-zones are fulfilled before transferring water to other parts of the country."[17] But, it also observed that the general belief that "there is a huge quantity of water available which can be transferred to the southern and western parts of the country" should be dispelled. It revealed that the "available surface water is just sufficient to meet the requirement of Bihar projected for the year 2050 and hardly 2708 Mcm is spareable for transfer to other states."[18] It was concerned that, "Most of the transfer of water is envisaged from the storage though transfer of water from run-of-the river during monsoon is also proposed. But such transfer of water will not have significant impact on the flood moderation."[19] It recommended that, "The NWDA schemes do not at all show concern over the flood problem of Bihar, which must be given full priority by, (a) allowing flood cushion on all the reservoirs in Himalayan Rivers especially in Kosi and Gandak at least to the extent of 10 to 15 per cent of the live storage in them. (b) Undertaking effective, economical and beneficial soil-conservation steps in the catchment area of these reservoirs with a view to (i) minimizing siltation in them and (ii) thus enhancing the useful life of these reservoirs and reducing dead storages, and (iii) for making the scheme beneficial to the people of Nepal."[20] The Committee wanted that, "Bihar must be associated from the very beginning with the planning, execution and operation of the reservoirs on the rivers flowing through Bihar."[21]

It seems that the NWDA did not bother to look into the grievances of Bihar and that led to the appointment of another committee by GoB in September 2004 to look into the six links that directly or indirectly concerned Bihar, in view of the suggestion of the Director General-NWDA in the 32nd meeting of its Technical Advisory Committee held on September 8, 2003 in New Delhi under the chairmanship of the Chairman CWC "that the ground water should not be considered in the water balance studies as done by the NWDA."[22] Accordingly this Committee considered

only surface water availability for its study. It was also expected to (i) Focus on the flood problem of the state and study the Kosi-Ghaghra link by including the Kamla, Bagmati, the Adhwara group of rivers and the Burhi Gandak; (ii) Suggest means to maximize irrigation from the Chunar-Sone barrage and the Kadwan Dam-STG link; (iii) Look into the possibilities of irrigation of eastern Bihar with the help of pump canals and also to suggest means to augment flows in the Ganga in the non-monsoon months; (iv) Assess per capita availability of water in different basins of the state.[23]

The Committee, which submitted its report in April 2005, while appreciating the objectives of the NWDA, once again reiterated that "It completely ignores the problems related to water resource development in the basin from which surplus water is proposed to be transferred… The ILR proposal neither cares about the level of development in the so-called 'surplus' basins vis-a-vis the level of development in water deficit basins it proposes to transfer the 'surplus' water nor it is concerned about the inequality and regional disparities...Since this present mega project of interlinking of rivers is going to be the biggest and the final plan in water resource development, any mistake in its planning and implementation will lead to very adverse and serious consequences, which will have no remedial measures and will be almost impossible to rectify in future."[24]

Obviously this committee of two former Engineers-in-Chief and two former Chief Engineers of the Water Resources Department of Bihar did not take very kindly to the proposal of NWDA.

Water Balance of Bihar — Scarcity amidst plenty

The Report of the Expert Committee on Impact of Interlinking of Rivers on Bihar, April 2005 did a water balance study for the state after the ILR was set rolling at the national scene. The Committee appointed by the state was not in agreement with the findings of the Second Bihar State Irrigation Commission 1994 (SBSIC) and did its own computations to assess the quantity of water within the state."[24]

The Committee's calculations showed that 76.2 per cent of the surface water yield in Bihar can be attributed to catchments outside the state and only 23.8 per cent of it is generated on its own ground. Also, around 76 per cent of this water is generated during the monsoon months and since the land of the state is virtually flat, there is little chance of storing the water through structural means, as dams cannot be built on flat lands. SBSIC had put the utilizable surface water within the state at 37000 Mcm which amounted to 28 per cent of the available surface water (132,175 Mcm). Interstate and international agreements on the utilization of surface waters put further restrictions on the use of available water within the state. All the three major rivers of the state, the Sone, the Kosi and the Gandak come under the purview of such agreements.

Bihar is often misjudged as a flooded state but the areas located south of the Ganga are chronically affected by droughts. The cultivable area of South Bihar is 36.82 per cent of the entire state's cultivable area but the water resources available there are only 13.87 per cent. Even within South Bihar, there are disparities between different river basins. The culturable area of South Bihar, beyond the Sone Basin, is 24.09 per cent of the culturable area of the state but water availability in that area is as low as 6.42 per cent of the state's water resources. Most of the drought-prone area of the state is located in this region. "This clearly brings out the need for transfer of water to this sub-region from other regions and basins."[25]

The Expert Committee is also unhappy that NWDA has not cared about the high population density and food requirements of the state that needs high cropping and hence high irrigation intensity. The report suggests that NWDA has ignored the recommendations of the National Commission For Integrated Water Resources Development Plan NCIWRDP (1999) and that of the Reserve Bank Of India (1984) and proposed an irrigation intensity of a mere 100 per cent in new areas which are not covered under any irrigation project and proposed to retain the irrigation intensities of existing irrigation projects if it exceeds more than 100 per cent. Thus no increase in irrigation intensities of existing projects has been proposed by NWDA, if it is more than 100 per cent. The Committee has proposed an irrigation intensity of 230 to 250 for the state in view of the possibilities of agricultural development in the given agro-climatic conditions, its financial position, high density of population and assessed its water requirements accordingly.[26]

The Committee has charged NWDA that it has not cared about the flood problem of the state in its plans and has sought modifications in the plans for the link canals related to north Bihar. It suggests the provision of a flood cushion of at least 10 to 15 per cent in the live storage of the Kosi and the Gandak projects. Obviously, no such provision has been made in the design, if any, of these proposed dams. Referring to the Kosi-Ghaghra link in particular, the report suggests that dams should be proposed for storage on the Bagmati, Kamla and the Masan and the section of the proposed canal be modified to suit the additional flows. The report is not satisfied with the live storage and flood cushion that has been proposed for the Kosi High Dam.[27] It also observes that the proposed dam on the Gandak is too small in height to have any flood cushion.

The Expert Committee is skeptical about the proposed westward links of Yamuna-Rajasthan, Sharda-Yamuna and Ghaghra–Yamuna and wants that before any transfer of Ganga-Brahmaputra waters is made to the western parts of the country, the needs of West Bengal, Bihar and Bangladesh must be very carefully evaluated. The experts are particularly concerned about the Bangladesh part of the linking program as it directly concerns Bihar.

The Ganga is an international river and there is a commitment by the GoI to meet certain flow requirements at Farakka for Bangladesh during the lean period of February, March and April. These commitments of GoI are based on the studies of the river flow at Farakka during 1960-1982. SBSIC looked into the availability of flow at Farakka based on the data of 1960-92 and found that there is a shortage of flow at Farakka to the tune of 309 cumecs in February, 469 cumecs in March and 174 cumecs in April compared to what was reported by CWC in 1982. Utilization of water by new schemes upstream during the gap period is stated to be the main reason for the low availability of water in the said months. Many major schemes like the Gandak and the Kosi projects are not using their ultimate irrigation potential and once all the ongoing schemes are completed, there will be a further decline in the availability of the flow at Farakka. This shortfall is likely to be 732 cumecs during February, 579 cumecs during March and 371 cumecs during April. This is a very serious problem for Bihar because withdrawal by Bihar during the lean months has been restricted. Restricting Bihar and allowing all other states to tap the Ganga water is a gross injustice to Bihar that has hampered its growth.[28]

The per capita availability of water, particularly in South Bihar, is alarming. In basins other than the Sone, water scarce conditions already exist and the availability of water per person is likely to touch 500 cum in 2050. It is worth noting that the available water per person in many basins of South Bihar is far less than the water available per capita in the basins of Krishna, Cauvery and Pennar, in Tamil Nadu and the Expert Committee wants that water should be imported to these basins from outside to meet their demands.[29]

The Committee has come out with its own plans for the intra-linking of Bihar rivers first and after seeing the performance of these links and availability of water after meeting its own needs, Bihar may consider the export of its waters to others. The Chief Minister had promised the people of Bihar that work on these links of South Bihar would start in the month of April 2006.[30] Nothing of that sort happened in April 2006 but an assurance came in November 2006 that work on the intra-linking of South Bihar rivers would start in April 2007.[31] Only tenders were floated at that time, to invite bids for preparing DPRs. When the DPRs are yet to be prepared, one can very well imagine when the work would start. The centre's response to Bihar's approach is still awaited.

The ILR has a definite relationship with Nepal as the proposed dams in Nepal form an essential component of the interlinking of Himalayan Rivers and the success of this scheme depends on these dams. It seems, Nepal has not been officially informed of India's river linking plans and as a result no official response is available from Nepal. Its civil society however, seems to be concerned about the issue since according to them the related issues with earlier projects and treaties with Nepal have not yet been resolved. The GoI is going slow with these proposals of the Himalayan river links and the initial emphasis is on the 16 links of peninsular India. Bangladesh has opposed this project as it fears that the proposed linking of the Brahmaputra and the rivers of the Gangetic plains is against its interests. Even after being assured many times by the GoI that the ILR scheme of India is only at a conceptual level, Bangladesh does not seem to be convinced and protests continue.

There is always an element of politics on the issue of floods in Bihar and the politicians take the electorate for a ride when it comes to dealing with the floods problem, by making new promises. The ILR scheme is latest on the agenda but it has not yet replaced the Kosi High Dam as far as the people of Bihar are concerned. ILR may kindle a hope for a better future for Bihari farmers, but they are not willing to trust the government in view of its past performance.

10.5 World Commission on Dams (WCD) Report and Himalayan Dams

The World Commission on Dams (WCD) released a report in 2000. It has given a set of criteria to be followed in any dam construction in the future. These are just guidelines and not directives. It has generated considerable interest and debate among various stakeholders and it will be of interest to go through some of portions of this report. According to its authors, the report is not intended as a blue print for or against dam construction and yet it has sent shock waves in official circles. India's Water Resources Ministry and the Central Water Commission have rejected it.

Dams, or for that matter any other engineering structures, have two aspects related to their construction. One, they require an analysis of the designed benefits and cost to the society or the nation as a whole, which include all the social, environmental and physical costs. The concerned departments and the engineers should express their opinion freely, guide

the debate over benefit and costs, with facts and figures, and clear any uncertainty that may be there on technical matters raised by the technical or non-technical stakeholders. Based on such an analysis, a decision to build the structure can be taken with the consent of all the stakeholders with their full and prior knowledge of all the aspects of the building activity. Two, purely technical matters, e.g., the design, construction and to a large extent operation and maintenance should be left to the technically trained project personnel.

The report of the WCD is virtually, and rightly, silent on the latter but it talks mostly about the decision-making process where it believes that there is scope and a pressing need for participation of all the 'stakeholders'. It is here that the report talks about the core values of equity, efficiency, participatory decision-making, sustainability and accountability. Unfortunately, engineers are wary of terms like equity and participatory decision-making. They may understand, in their limited framework of activity, terms like efficiency and sustainability. They may also understand accountability (for many it is just the accounts) on a day-to-day basis, till 'as constructed' drawings are prepared, but long-term accountability in large structures is a non-existent concept for them. They tend to believe that decisions regarding large development projects are more political or administrative ones rather than being just technical ones. Unfortunately engineers take upon themselves all the responsibilities linked with a project, like resettlement and payment of compensation, etc. whether they are competent or trained for that or not.

The common people are not interested in analyzing statistical figures and their interpretation. That is the job of the engineers. But their claims are at times questioned by civil society. In the case of large dams the most that common people want to know when a particular project is taken up, is whether their irrigation and power requirements will be met and whether the project will interfere with their lives and livelihoods. Having appreciated the project on the assurances given to them, they are not bothered about engineering jargon like benefit-cost ratio, or what happens at the national or the global level, etc. That is the concern of planners and engineers.

Most people feel helpless in registering any protest if their aspirations are not met. It is here that a prior and informed dialogue is needed between the laypersons and the technical experts. The engineers must tell the people that a particular project cannot meet all the irrigation requirements of the area, say, in the rabi season or that the project is only meant for providing protective irrigation in the kharif season. That a particular dam will provide only partial protection from floods, only flatten the peak flows and that total protection against floods is a misnomer. That the power produced from the project will be used mostly to meet the demands of industry and townships, on a priority basis, and only the remainder will come to those who will sacrifice their land and livelihoods for the project. Let the society, especially the project affected people, judge the assured benefits and decide whether the costs to be paid by it are in tune with the benefits to it and the nation as a whole. Once it decides that the costs are worth paying for the benefits to be reaped, let it entrust the job to the engineers with all the confidence vested in them.

Governments and their departments, builders, and financing agencies, however, are rarely interested in such debates because usually there are many non-technical reasons for undertaking a project and there is a possibility of their game being exposed in the process.

The WCD report supports just this when it says, "It offers an effective way to determine who has a legitimate place at the negotiating table and what issues need to be included in the agenda."[32] This is precisely what the concerned department and politicians do not want to happen. They apprehend that the existing democratic institutions would be rendered irrelevant and so will be the very basis of administration by elected representatives of the people, if too much participation of the stakeholders is practiced.

The WCD report has focused "...on the key stages in decision-making on projects that influence the final outcome and where compliance with the regulatory requirements can be verified."[33] This again does not suit the planners and those at the helm of affairs. The Union Ministry of Water Resources (MoWR) argues that, "Free thinking, free expression, and free choice would remain elusive unless such motivated groups keep out and bona fide local leadership can emerge so as to project the genuine concerns and sentiments of the local people."[34] The fact is that freethinking, free expression and free choice is not possible without an informed debate, which the MoWR intends to evade. The latter concedes that, "...a more rational approach would be to consult the people which are likely to be displaced, on matters of rehabilitation and resettlement programs so that relocation takes into account their social and economic aspirations..."[35] Thus it presumes that other than rehabilitation, there is no problem linked with these structures for which there is a need to get the views of the people. It very conveniently forgets that people had to struggle hard through decades to get even this small concession from the

governments. And why debate only the relocation issue? Why shouldn't there be a debate if a particular project fails to perform? Why should people keep quiet when they find that the waterlogged area in, say, the Gandak project is more than the area the project irrigates and the flood protection embankments on all the rivers, from Uttar Pradesh to Assam, are smashed to smithereens every year during the rainy season with virtually nobody held responsible for the lapse?

The interesting part of this debate on the WCD Report is that the Government of Nepal has accepted it while the Central Water Commission of India and India's Ministry of Water Resources have rejected it. Whenever any dam will be seriously discussed between the two countries, the recommendations of the WCD Report will become a point of contention, with Nepal insisting on adherence to its provisions and India contesting them.

10.6 Flood Control

Some details about the status of flood control in the state have been discussed in Chapter 2. The flood-prone area of Bihar is 73.06 per cent of the total area of Bihar. The total flood-prone area in North Bihar is 3.753 Mha (excluding the Ganga stem), which is 82.8 per cent of the total drainage area of different northern tributaries of the Ganga in the state. With such a large area lying under a sheet of water for much of the year, survival is difficult in this region where 87 per cent of the population depends on agriculture for its livelihood. Just to get an idea of the floods in the state (present day Bihar) it should be mentioned that in the worst ever flood of the last century, in 1987, nearly 28.24 million people were affected in an area of 4.60 Mha spread across 23,852 villages. The crop area affected was 2.5 Mha and 1,682,069 houses were damaged in this flood, while 1373 persons and 5296 cattle died.[36] In the 2007 floods, 22 districts of north Bihar were hit, affecting 24.81 million people, and an area of 2.7 Mha. Crops were lost over 1.663 Mha and 7,36,857 houses were damaged that year. Some 960 persons and 1006 cattle died in these floods.[37]

The miseries do not stop there. In Bihar 941,000 ha are waterlogged of which, North Bihar's share of 836,000 ha are permanently waterlogged. To truly appreciate the extent of this problem, one can use the state's population density of 880 persons per sq km to determine that this land should be supporting 7.5 million people. The remaining 106,000 ha are located south of the Ganga. It is suggested that a total of 250,000 ha are beyond redemption.[38] The government has been making plans upon plans since 1958 to solve the problem of waterlogging in the Kosi basin. It even appointed a special task force in 1988 to look into the problem but no activity is visible on the ground. A sum of Rs 1.0 cr was allotted for some drainage works in the Western Kosi Canal command in 1997 but when the engineers went to the site to dig the drains, they found that the topography of the land had changed grossly and it was not possible to execute their plans unless the ground was surveyed afresh.[39]

People have been making persistent demands for controlling floods but construction of embankments has clearly not provided a satisfactory solution. Now that the embankments are clearly failing to fulfill their protective roles, the government is promising to remove the threat of floods in Bihar with the help of the proposed dams in Nepal. The public has never had any role in any decision-making nor are they likely to have one in the near future.

Almost all the major rivers of north Bihar originate outside the state and that makes it helpless in dealing with these rivers in their entirety. It also gives an opportunity to politicians and engineers to dangle the carrots of the proposed dams in Nepal. Engineers insist that floods cannot be prevented in Bihar unless these rivers are tamed in the hills before they disgorge into the plains. The technocrats do not have direct communication with the public but they have convinced politicians who then espouse this solution and make promises to the people at floods and election time. The dam across the Kosi at Barahkshetra in Nepal was publicly proposed as far back as in 1947 (The first proposal was made in the 1937 Patna Floods Conference) Six decades later, this proposal is still under the 'active' consideration of the two governments. Numerous other high dams across other major tributaries of the Ganga have been proposed and continue to be discussed by the two governments. But will building a dam in the mountains of Nepal take care of Bihar's woes? The Second Irrigation Commission of Bihar (1994) suggests that the Kosi has a catchment area of 59,550 sq km up to the point in Nepal where the Kosi High Dam is proposed to be built. Below this site the river has an additional catchment area of 2,266 sq km up to the Bhimnagar barrage and 11,410 sq km between Bhimnagar and Kursela where the river joins the Ganga. This brings the total catchment area below the dam to 13,676 sq km, which is only slightly less than the catchment area of the Bagmati and nearly double that of the Kamla. Those who have seen the Bagmati and the Kamla in spate can imagine the quantity of water carried by these rivers. The precipitation below the proposed dam would try to get into the Kosi and the embankments will prevent it from entering the river. This would mean that there will be no change in the waterlogged conditions in the countryside of the embankments of the Kosi River. Also, since all the waters reaching Barahkshetra will

not be intercepted there, releases from the dam will always keep the population living within two embankments of the Kosi on their toes.

Besides, the conditions required for hydro-power production and flood control through a dam are conflicting in nature. For power production, the reservoir should be full to the extent possible while flood control demands that the reservoir should remain empty and at least the flood cushion provided in the dam should never be encroached upon. Hydro-power production always has the upper hand in operating a dam and this happens at the cost of flood control. It should also be noted that the worst ever flood in the Kosi occurred in the month of October 1968. As an accepted norm, floods are taken very lightly after the month of September. The devastating floods of West Bengal (1978) that occurred in the first week of October that year are another example in support of this argument. Dams become almost ineffective in such cases as far as flood control is concerned. The seismicity debate about dams is yet to be resolved. (See Section 10.3) There are many such hiccups that are delaying the construction of the proposed dams in Himalayas.

News coming from across the border suggests that many hydro-electric projects are likely to come up in Nepal. The Nepal Government signed a Memorandum of Understanding (MoU) with India's Sutlej Jal Vidyut Nigam for the construction of a 402 MW Arun-III Hydropower Project in March 2008. Another Indian company GMR Energy Ltd bagged the 300 MW Upper Karnali Hydro-electric Project. A 750 MW West Seti project with Australia's Snowy Mountain Engineering Corporation (SMEC) was also on the anvil. Many other Indian companies like Jindal Steel and Power, Reliance Energy Ltd, and Jay Prakash Associates were also trying to get contracts there. The sailing is not going to be smooth for these companies as there is a lot of resistance within Nepal for contracts being awarded to foreign companies and courts have already been moved to review the decisions. It is also worth noting that flood control is a non-issue in all these proposals.

Raising and Strengthening the Embankments

In the face of the indefinite postponement in construction of the dams in Nepal, the GoB wants the existing embankments to be strengthened and raised. It also wants to blacktop them to facilitate movement of vehicular traffic. It is difficult to appreciate whether any of these measures will reduce the impact of floods, rising of the riverbed level, breaches in the embankments or water logging. There is a directive to evacuate people who have made the embankments their permanent or seasonal abode. Many such people living on the embankments have been served notices to that effect. The government believes that these 'encroachers' obstruct the maintenance of the embankments. It does not realize that these people are not there for fun or for a picnic. They are there because their villages, homes and fields are eroded, sand cast or waterlogged but not for any fault of theirs but because of a failed government project and they have nowhere else to go. The embankments are the only high grounds available now where people can find a dry place to avoid the floodwaters. Why does not the government identify the reasons for such 'encroachment' and provide these victims with safe places to live and then spruce the embankments?

In addition to raising and strengthening the embankments, the government also takes up anti-erosion and town protection works. It plugs breaches in the embankments that have occurred in earlier floods. Plugging the breaches and raising the embankments is often challenged by the local population. The question is who takes these decisions? Obviously, it is not the people who live close to the embankments, whether inside them or immediately outside them. This cannot be the choice of those living within the embankments because raising and strengthening them or plugging the breaches, may or may not help those living outside the embankments but it will definitely spell doom for those living inside them. Those living immediately outside the embankments also may not subscribe to breach plugging or raising the embankments as higher and sturdier embankments would pose a greater threat to their survival.

This decision can only be made by those who live far away from the river and are not exposed to its vagaries. These measures can only inflict more injuries on those who are already suffering. Blacktopping the embankments will improve communication, but will not affect floods or water logging at all and the people should be made aware of that.

Vested interests in earthwork may have a definite role in such decisions. During the RJD rule between 1990 and 2006, not an inch was added to the embankment length within the state and all the available money on flood control was spent on repairs and upkeep of the embankments. The present NDA government in the state has taken up the extension of the Bagmati embankments in its middle reaches in 2007 at an estimated cost of Rs 792 cr amidst protests from the affected people. It has further plans to embank the Mahananda tributaries at an estimated cost of Rs. 850 cr. This has been a major policy change after the fall of the RJD government in the state in 2006. Common man, however, had never any role in such decisions.

10.7 Playing Politics with Floods

The British preferred to 'leave the rivers to their own devices' as the benefits accruing over a period of say ten years used to get washed away in one stroke due to a breach in an embankment. Just before India's independence, they conjured up the idea of a high dam on the Kosi in Bihar on the pattern of the Tennessee Valley Authority TVA and its new-born Indian version, the Damodar Valley Corporation (DVC). Leaders in independent India were in a hurry to provide some succor to the people affected by floods and resorted to building embankments because going in for high dams required huge investments and arranging that much money was going to take time.

It was known from the very beginning that embankments had their own set of problems. After an initial lull, they started breaching besides creating all sorts of other problems. The engineers trotted out standard excuses that the breaches were caused by rats and foxes that dug holes in the embankments leading to their failure. This logic was first given in independent India when the Kosi embankment breached near Dalwa in Nepal (1963). Then came the turn of anti-social elements who breached the embankments for their own benefits, followed by blaming Nepal that it released water into the rivers even when it did not have any control over the rivers to release water. (The two barrages on the Kosi and Gandak are manned by engineers of the Water Resources Department of Bihar. If there is any unwanted release, it is obviously caused by WRD personnel, presumably with the consent of the department. Needless to say, that these engineers draw their salaries from the coffers of the Government of Bihar.) Now the blame for floods and breaches of the embankments is also put on climate change. These are some for the excuses given by the Water Resources Department of Bihar to shrug off its responsibility for floods in the state.

During the flood season of 2002, the BJP, on August 11, 2002 held a meeting on floods in Patna emphasizing that the proposed dams in Nepal were uncertain and that the state government, then led by the RJD, instead of passing the buck to the centre (then ruled by a BJP-led coalition) ought to strengthen its machinery to tackle the floods locally. The same BJP now wants river-linking to be pursued with extra vigor knowing fully well that the Himalayan component of the river-linking project only means dams in Nepal first.

At the state level, the government has to face the floods and the public. Its usual response is to tell people that it is conscious of its obligations but since the final solution to the flood problem of the state lies in the construction of dams in Nepal, it can do precious little in that matter as it is an international issue and must be looked after by the central government. The latter tells people that water, floods included, is a state subject and it is the state's responsibility to provide succor to the people. Thus the buck is passed back to the state.

The debate becomes interesting if different political parties rule at the state and the centre at a given time. The Congress Party has ruled the state and the centre for about forty years and its opposition for the rest of the period. If the non-Congress parties were serious about the floods issue, they could have resolved the issue of the proposed dams with Nepal. Devegowda (Prime Minister of India from June 1, 1996 to April 12, 1997) had taken the initiative to resolve the Farakka barrage problem that ended with a treaty being signed between India and Bangladesh. With Lalu Prasad Yadav, the Chief Minister in Bihar (from March 10, 1990 to July 25, 1997) and Devegowda or Inder Kumar Gujaral (PM from April 12, 1997 to March 19, 1998) in Delhi, it was possible to iron out issues with Nepal but nothing of that sort happened. A treaty was signed between India and Nepal (December 1996) regarding the Mahakali project which was basically a power project and had little to do with flood control. That also shows where the priorities lie.

There is definitely much more than meets the eye that all the political parties, whether friendly to the ruling party in Bihar or otherwise, feel handicapped in dealing with Nepal on the dams issue. One possible reason is that a technique to transmit power over the high Himalayas is yet to be commercially developed. Therefore at present it is not possible for Nepal to sell power to China across the Himalayas, leaving only one big purchaser for the power produced in Nepal, i.e., India. The situation is not very favorable to India either as it is essentially a market with only one seller and one buyer. This is not a desirable situation according to economic principles. Apart from the dependency syndrome, it is also likely that the structural safety of the dam is a major concern as far as India is concerned. These problems prompt the two sides to carefully weigh all the available options and so it takes a long time to come to a conclusion. Unfortunately, many of these concerns are not discussed in public. In the meanwhile, the passing the buck game goes on unabated on a yearly basis.

Politicians do not attach much weight to floods and the resulting miseries. We saw in Chapter 4 how Dr. K.L.Rao left for the USA after the floods struck in 1968. During the terrible floods in 1998, the ruling party in Bihar was busy organizing the Ekjutata (Solidarity) Rally in Patna to fight communalism. It could have been postponed very easily to a later date as there was no emergency on the communal front."[40]

The responsibility of providing relief in the wake of natural calamities primarily lies with the concerned state governments. The Government of India supplements their efforts where necessary by providing logistical and financial support. For this purpose, the state governments are allocated a Calamity Relief Fund (CRF), to which the Government of India and the state governments contribute in the ratio of 3:1. Additional assistance is also provided to the state government in the event of a calamity of severe proportions from the National Calamity Contingency Fund (NCCF) after following the procedure laid down.

According to reports available from the Bihar government, a corpus fund of Rs. 108.97 cr was available with it in the CRF in August 2003. Out of this money, only Rs. 19 cr were released for carrying out relief operations in the state till August 2004. Yet, the Rabri Devi government in Bihar was flaying the central government for not helping the state with the required money. Writes Anirban Guha Roy, "The state government is yet to get the central assistance of Rs. 112 cr allotted in 2002-03 under a special package for relief distribution in the flood affected districts. The central government has not released the money as it has taken the stand that the state government should first spend the CRF money before it seeks the release of more central funds."[41] Obviously the state government was not in a position to produce the necessary utilization certificates for the funds given to it earlier and wanted the flood victims to believe that the central government was responsible for the tardy relief response.

10.8 Relief : The Fourth Crop of the State

After failing to control floods, the next option that is open before the government is to provide relief to the people and the current quantum of relief that can be given to a person is listed in Section 9.14 of Chapter 9 (The Twelfth Finance Commission has modified these provisions for 2005-2010).

Normally relief packages are announced when the flood impact is serious. Since most of the flood victims are ignorant of the relief packages, officials start exercising their own discretion in relief distribution. In the absence of any check on their activities, much of the relief material slips into the wrong hands or gets manipulated by power brokers. Newspapers abound with such stories during the rainy season. Informed people say that if one is powerful enough, one can manipulate the whole package. This is a crop that grows with the miseries of the flood victims and can

Begging for alms - will it ever end?

be harvested by those who know how to cash in on it. No season is better than the rainy season to see this crop flourish. Many people call it the fourth crop of the state, in addition to the rabi, kharif, and the hot weather ones.

Inadequate Relief and Unkept Promises

The word relief was not known to the people of the flood ravaged district of Saharsa till 1936.[42] Those days a Deputy Collector level official used to visit the flood hit areas with a couple of thousands rupees and distribute them among the affected families. The Patna Flood Conference (1937) did not solve the flood problem of Bihar but it helped increase this relief budget. In 1947 Advisory Committees were formed in Saharsa, Darbhanga and Munger. They advised the government to streamline relief operations and slowly schedules for availability of boats, working of Charkha Groups and work centres, waivers and concessions in repayment of loans, etc. were worked out. The annual expenditure on relief by the government was only Rs. 5 lakhs.

Laliteshwar Mullick writes, "The experience of the Saharsa Advisory Committee was quite bitter. With the available money, it was not possible to provide relief to everyone. This bred dissatisfaction. Further, those who were given relief took it as their right and did not work. This led to their moral degradation and tended to make them beggars. Then, there were many middle class families, especially the widows, who did not want to take relief although their situation was no less pathetic than the poorer sections of the society."[43] The British used to have a special quota of relief for the '*Zenana*' of middle class families as they would not come out to seek relief. The officials used to reach them with relief.

Over the years the population has gone up and so has the number of flood-affected people. The relief budget, which used to run into lakhs some 50 years ago, now runs into hundreds of crores. Yet, it remains a tiny fraction of the flood losses which have skyrocketed. The money that is available to the state for carrying out relief operations from all sources, including the Calamity Relief Fund, the National Fund for Calamity Relief, and the state government's own allocations, if any, remains grossly insufficient to meet the requirements of all the flood-hit people. Dunu Roy writes, "It emerges that while the centre has released its 75 percent share of the funds, this is still less than 10 percent of what the states are assessing as the real damages. Even if the 25 percent share of the states is added up, it still makes up only 14 percent of the total damage claim. This means that either the states are greatly exaggerating (as much as 10 times) the losses incurred because of the floods, or that the allocations are hopelessly inadequate....it also means that if the affected people are to recover their livelihoods after the floodwaters recede, they have to do so by mobilizing their own resources on a significantly large scale.'[44]

Analysis of the damages and the relief provided in Darbhanga district in 2002 provides an idea of what fraction of the flood-hit population is actually served by the relief. This was one of the worst flood-affected districts in the state. Some 1078 villages with a population of 2.63 million, spread over 18 blocks were hit by the 2002 floods.[45] Assuming a family size of 6, nearly 437,670 families must have suffered. According to official figures, only 28,839 families in the district just 6.6 per cent of the families affected by the floods, were given shelter. On the other hand, in Gopalgunj district, the home district of the then Chief Minister, only seven blocks of this district comprising of 314 villages with a population of 696,000 or some 116,000 families were affected by floods that year. The government provided relief to 58,295 families, or half the affected families. This shows that proximity to power leads to discrimination. The other side of the coin is that even in the district of the Chief Minister around half the affected population remained untouched by the relief operations.

The official machinery can be quite insensitive even in supporting the Armed Force in delivering relief. The Army is often deployed to look after rescue and relief operations. Its personnel, being strangers to the flood-hit area, depend heavily on the civilian authorities for their movements. A report from Orissa, during the floods of 1982, revealed, "The army units at Bhuwaneshwar sector had to wait for a long time in the morning almost everyday before the civil guide would leisurely arrive at the Territorial Army flood control room. It was later found that the state government did not even have a list of local level officers who were to go as civil guides. The search for an officer to go as a civil guide would begin in the morning every day. The Additional District Magistrate charged with liaison

Helicopter carrying relief crashed in Darbhanga-July 2004

Squabble for relief - only the taller can reach

between the army and the state government would go from house to house to persuade one or another officer to agree to do the job. Naturally, the man who was thus persuaded would take his own time in getting ready and reaching the army control room. By the time the army unit with the civil guide drove to the point where the motor boats could be launched, a good part of the day would be over and the coverage could not go beyond a few villages on the day.'[46]

Things do not change at all despite chanting the 'Preparedness Mantra'. In Bihar, during the 2003 floods, the army was deployed in the Danapur sub-division of Patna district for rescue and relief operations. The state government failed to provide diesel for the army boats in time, while the trucks carrying food packets from Patna to Danapur did their job leisurely and only half the supplies reached the take off points for the IAF helicopters.[47] It is also known that about 40 per cent of the airdropped supplies fall into the floodwaters and are rendered useless. In order to show flood damage to a politician, about 80 kilograms relief supplies are off-loaded from the helicopters.

Following the floods of 1987, the Government of Bihar made many promises to the people and one of them included "In every Panchayat affected by floods a high raised and covered platform will be constructed and in every block of the districts, helipads will be constructed. Every Panchayat is being given boxes containing life-saving medicines."[48] What was constructed at some places was just a platform of loose, easy to erode locally available sandy soil without any cover. Most of these platforms have eroded away and some local people have made better use of them by cultivating pointed gourd. Nobody in the government may even remember that such futile gestures were made.

Some Get Bullets for Relief

Not much has changed since 1947 except that we do not hear anymore that somebody has refused relief. In fact, there is scramble for relief in all quarters. The situation has deteriorated so much that at least on eight occasions in the recent past police had to fire on relief seekers. The first incident of its kind occurred in Pothia (Kishanganj district) in 1991 when three persons were killed. Official sources confirmed two deaths as the body of the third person could not be located. In another incident, the police fired 'in self defence' at relief seekers in Sitamarhi on the August 11, 1998. Their fault was that they were demanding adequate relief and protesting against bungling and mismanagement in relief operations.

In the present decade six more police firings on relief-seekers have taken place in different districts killing at least 14 persons, including a 14 year old boy, Mantun Paswan. In each case the police claimed to have fired in 'self defence'. The chronology of these firings shows an increasing frequency of such killings implying decreasing tolerance of protests and probably that the protests themselves are becoming more threatening.

In 2007, apart from police killing one person in Madhubani on August 3rd and the other in Sonbarsa block of Saharsa on August 13th in a firing, acid was poured into the eyes of a person asking for relief in Tamuria village near Laheriasarai in Darbhanga district on August 24th. The last incident is reported to have occurred because of personal animosity.

10.9 The Role of NGOs

NGOs play a significant role in providing succor to the people in times of calamities. Many NGOs have done a commendable job of standing by the people in their times of need. They have successfully rescued people from certain death and have undertaken rehabilitation activities by providing temporary shelters, permanent shelters, medical relief, food, clothing, agricultural assistance and economic rehabilitation. Many NGOs have not only used disasters as an opportunity to reach people, they have become a source of inspiration to others by helping people to stand on their feet.

NGOs are of several different types. Some are from the old Gandhian background conforming to the ideals of struggle along with development. Many NGOs operating in north Bihar are a product of the students' movement of 1974, committed to the ideals of Total Revolution propounded by Jay Prakash Narayan. The influence of Christian missionaries is not very significant. All these three types have some ideology to back them. There are other NGOs which function as development groups committed to the economic and social uplift of the people. The old Gandhian institutions are fading away and the struggle-conscious 1974 groups are losing their fire. Both these groups had struggled in the past and did not see a solution to the problems faced by the people in economic activity alone. Both felt that a change in the system is a must for social development and that would only come through struggle. That was the basis of the Social Action Groups of the late 1970s in the post-emergency era.

The prevailing NGO scene, however, comprises mostly of the development groups with economic programs of education, health and livelihoods, etc. at their centre. Most of the resources available to NGOs are now cornered by this group as most of their donors, though, championing the rights of the people, want perceptible, measurable, time-bound results. The donors now do not subscribe to the idea of social action anymore. A SMART (Specific, measurable, attainable, realistic and time bound) approach, as they call it, is the key to success. This comes mostly through economic activity that generates programs and products that are visible. It is easier to quantify the progress, maintain stock registers and pass books, and calculate benefits and costs and physically present the objects before the donors in such cases. Resource-wise, the Social Action Groups of the 1970s became the first victims of the changed attitude of the donors.

There is hardly any room for ideology or debate in this kind of work except that money is made available for doing some good work with visible results and if a group is prepared to follow the procedures laid by the donors without making any fuss, the latter can adopt them as the implementing agencies for their programs. Metrics in themselves are not bad or undesirable. They certainly help in enhancing the effectiveness of relief. But they cannot be the end all of relief work. The working processes have been made so cumbersome that procedures overtake actual work. It is the report, and not the work, that is more important. There was a time when donors used to respect field workers, but now they are viewed with suspicion and contempt. Monitoring of the projects has been replaced by virtual 'policing' of the job. The donors do not like groups with a differing view who raise questions or make suggestions, even valid ones. They expect the supported groups to don their caps, use the umbrella marked with their name and emblem and wear shirts sporting these items. They also expect the NGOs to put up sign boards depicting their names at the work or programme sites. Fixing flags on the boats and huge stickers on their jeeps carrying relief items is the latest fad of the 'selfless donors' They must be doing it, obviously, to raise more funds for the next calamity. This was not the case even 10 years ago.

As far as floods are concerned, the NGOs carry out relief programs, with such donors' assistance, in their area of operations. It starts with distributing food items, polythene sheets, medicines, clothes, utensils, bamboo for building huts and often graduates into long-term rehabilitation programs that easily continue up to the next rainy season. And here lies the catch. The donors offer all the facilities that may include a jeep, boat, motor cycles, computers, fax machines, furnishings, cost of telephones and travel to the town where their offices are located along with anything that is needed for the smooth running of 'their' relief program. The concerned NGO is relieved of all the worries of running the organization till the program lasts. This is enough to ideologically corrupt an NGO.

Once the program is over and most of the facilities withdrawn, the NGO which got used to such comfortable functioning for about a year, suddenly feels the vacuum and tries to regain the lost comforts. This comes only by putting up a fresh proposal to the donor for either continuing the program under some pretext or following it up with other programs. A vested interest in relief operations is thus created. The show runs even if one has to change the donor or the supported group. Most of the NGOs fall prey to such temptations throwing their own byelaws, aims and objectives to the wind. A relief agency is, thus, born with their volunteers turning into 'Relief Managers'. Relief for its own survival becomes more important than working to do away with the need for relief, i.e., ensuring flood control.

That is the reason why most of such organizations conduct relief operations in the same area over numbers of years without ever questioning themselves how long they will continue to do so and whether what they have been doing will solve the problems faced by the people. They do not have the guts to say 'no' to emergency food distribution which is conducted in the month of, say, January, because of administrative delays and indecision on the part of the donors, when the impact of the floods has been felt in the month of August in the previous year. They often dump their relief materials in one roadside village instead of reaching distant villages. They are not bothered about the disparity that their work creates within a village by ignoring the claims of many inhabitants or whether they are creating classes of 'haves' and 'have-nots' within the village. Such debates are non-existent now and the NGOs are only supposed to report such things that their donors want to hear. When there is no freedom to express one's views, the doors for any learning are closed for all concerned. Probably this happens because programs for the NGOs are now drawn up in the donor countries, based on their understanding of the problem and their local officials have little say in it. The donors have their own agendas. It is a lot easier to raise funds in their own countries by showing horrifying pictures of disasters and the 'good work' done by them in earlier emergencies. The same amount of money may be hard to raise for a well thought out development programme. It suits fund raisers also if disasters keep on striking at some point or the other.

In this context, it is interesting to note that an agreement was signed between the GoB and UNDP in 2002 to evolve a strategy to manage floods as disasters. Five districts of Bihar, Supaul, Madhubani, Sitamarhi, Muzaffarpur and Khagaria were chosen for making an intensive effort on this issue. Awareness building about disasters and their management is an important aspect of the agreement reached between UNDP and GoB. The 2003-2004 Annual Report of the Relief and Rehabilitation Department of GoB throws ample light on this collaboration between the two parties. Reading through the pages of the Report, one gets an impression that the main problem of disasters in Bihar revolves round earthquakes, not floods or droughts. Obviously the campaign launched by government agencies and NGOs, working on post-earthquake relief and rehabilitation in Latur in Maharashtra or Kutch in Gujarat, has affected the programs launched in Bihar. Workshops were organized in different part of the state to make people aware about the impact of earthquakes and the precautions to be taken in the case of such a disaster. Reports from such workshops suggest that the proposed dams in Nepal and the impact of earthquakes on them are not on their agenda and efforts are on to educate people about building houses that are earthquake safe. But the issue of reservoir induced seismicity and its impact on dwellings is by-passed in such meetings as are water-related disasters like floods and droughts.

It will be of interest to go through the events following floods in Rajasthan's Alwar and Bharatpur districts in 1996. Rajasthan's basic problem is scarcity of water and famine-like conditions on a continuing basis. The last flood that had occurred in the area was in 1976, some 20 years earlier. Attendance at awareness raising meetings about floods in those districts used to be very thin as the flood victims were simply not interested in understanding floods as a disaster. They were more interested in water as an irrigation input. The same argument holds for Bihar too. Floods and droughts, not earthquakes, are the predominant concerns in north Bihar, even though it has experienced two major earthquakes in 1934 (magnitude 8.7 on the Richter scale) and in 1988 (magnitude 6.3 on the Richter scale). Over 10,000 people were killed in the 1934 earthquake.

Many NGOs have participated in this program because they must have received some financial support for it. In the hope of getting some grant from the government or UNDP, these NGOs do not have the courage to tell the authorities that the principal disaster facing Bihar is water-related, whether surplus or deficit, and it will help people if more focus is given to such issues. To cap it all, when the floods were at their peak in 2003 and 2004, these NGOs took out cycle rallies in Patna and Muzaffarpur to make the masses aware about earthquakes, their aftermath and the precautions one should take to brave earthquakes. The next two years, 2005 and 2006 were years of unusual droughts in Bihar. It is likely that these organizations had given a time-frame for implementing awareness programs and the donors insisted that the

proposed schedule and the log-frame be strictly adhered to, compelling the NGOs to take out earthquake-related rallies in the midst of floods. These NGOs could easily have waited for a month or so to take out their rallies but insistence from donors to adhere to their targets and timetables must have put pressure on them to perform to orders. Most NGOs lack the courage to tell their donors the impracticality of their schedule and the donors, in turn, refuse to affect any change in the log-frame provided to them. As a result, they both end up in becoming objects of ridicule in the eyes of others. The irony is that neither of them is willing to learn any lesson and there seems to be no remedy for it.

10.10 The Growing Fad of Disaster Management

There is a growing fad for treating floods as disasters and pushing disaster management agendas as solutions to the floods problem. It should be made very clear in the beginning that floods in north Bihar are a way of life and not a disaster just as droughts are in Rajasthan. Politicians and engineers have turned floods into disasters which the NGOs and now even the government wants to manage. They have very cleverly diverted the floods debate into a disaster management program so that the often asked inconvenient questions regarding flood control policies and their implementation are never raised.

The first principle of disaster management is to prevent disasters. But the present practitioners of disaster management in Bihar rarely if ever focus on this issue. Unless attempts are made to do away with the causes that have converted the much-awaited floods into a disaster, any prescription to tame the rivers or their floods is not going to work. This would mean that the embankments, or for that matter any structure that impedes the free flow of water should not be built in the first place and if built, it should not be allowed to breach. This is only possible if such decisions are made by the local people in a democratic manner. The focus should be on improving the drainage so that the floods dissipate quickly and with minimum damage. It should also be well understood that indiscriminate and unscientific construction of embankments, roads and railway lines have obstructed the free flow of floodwaters and led to severe drainage congestion and prolonged flooding.

The flood damages of 2007 in Bihar sound a warning bell for the state's planners. According to official sources, there were 32 breaches in the embankments, 54 breaches in the state and national highways, and 829 on rural roads in Bihar. These floods were spread over 22 districts, affecting 12,610 villages and a population of 24.6 million people killing 960 of them and washing away crops over 16,63,000ha. Continuous rains between July, 1, and August 2, 2007 in the Bihar plains, the *terai* area of Nepal and the lower Himalayas brought life to a standstill for a long time. It rained three to four times more than the average for weeks together and districts like Samastipur, West Champaran and Khagaria was virtually cut off from rest of the world for a considerable period. Elderly people of the area suggest that they had never seen so much of rain in their life nor had they experienced such a prolonged stagnation of rainwater.

Surprisingly, despite so much rain and the accompanying losses due to floods, no major river of North Bihar touched the highest recorded flood level, HFL. The memorandum sent by the Government of Bihar to the Government of India seeking assistance for flood relief in August 2007 confirms this fact. This demand of Rs 8,000cr was later revised to Rs. 11,000cr. The HFL of the Bagmati at Sonakhan is recorded as 70.77 meters but in 2007 it only reached 69.75m. The Burhi Gandak, which remained above the danger level for weeks together, did not touch its record level of 46.35m at Rosera. The Kamla-Balan could touch 53.60m at Jhanjharpur rail bridge against the HFL of 54.34m. The Bhutahi Balan, which played havoc in and around Phulparas in Madhubani district many times during the year, did not touch the record level of 72.10m at Ekamma siphon and flowed to a maximum level of only 70.30m. The Lalbakeya attained a level of 72.42m at Gowabari against the HFL of 72.84m. The Ganga has an HFL of 50.27m at Gandhighat but the observed maximum this year was only 48.15m. The Punpun flowed 80 cm below the HFL of 53.91m at Sripalpur. The Kosi, at Basua, was flowing at 48.01m against the HFL of 48.76m. The Gandak followed the suit and its level did not exceed 95.80m against an HFL of 96.85m at Khadda.

If the maximum level of all these rivers was much below the HFL, one would expect that the damages caused by the floods would also be less but that did not happen. The obvious explanation that comes to one's mind for this anomaly is that there were a large number of breaches in the embankments, canals, roads and railway lines that led to moderation of floods and its levels and drainage congestion prevented the moderated floodwaters from escaping. The result was prolonged stagnation of water and nearly 25 million flood victims helplessly watched their dwellings slump down and their crops washed away.

Any lay person in the flood hit area of Bihar can tell that the embankment loses its meaning downstream of the breach point. One can also tell that the bed level of the river within the embankments has risen quite high leading to its reduced water carrying capacity and waterlogging in the protected countryside. To further compound the drainage congestion, the Government is

going ahead to embank the Bagmati in its middle reaches at an estimated cost of Rs 792cr and has plans to construct embankments on the tributaries of the Mahananda at an estimated a cost of Rs. 850cr. The people living within the two embankments of the river are always at God's mercy as the Government does not even recognize their existence.

WRD suggests in the memorandum that efforts should be made for Indo-Nepal cooperation over the flood issue. This is being said for the past 70 years without any success and it is difficult to make any sense of such an assurance. Flood forecasting, afforestation, capacity building and establishment of a Flood Management Institute at Patna has been proposed in the memorandum along with a National Disaster Response Institute in Patna. A totally irrelevant proposal to de-silt Bihar's rivers has been also made. It must be remembered that the proposal to de-silt heavily silt laden rivers like the one debauching into the Gangetic plains from the Himalayas was ridiculed in the Report of the Rashtriya Barh Ayog (1980). That a proposal should come from Bihar is even more astonishing since it had desilted the Eastern Kosi Main Canal a couple of years ago. There are hillocks of sand on either side of the canal and most of the slopes of the canal are eroding back into the canal with the passage of time. The problem is not in desilting the river if one has the resources, the problem is where to dump the excavated material. The memorandum is curiously silent over the issue.

The only good thing that happened in the floods of 2007 is that the Government reached most of the flood-hit families with one quintal of grains and an ex-gratia payment of Rs. 200 per family besides raising the compensation for the death of a person to Rs 150,000. This had never happened before in the flood history of Bihar. On the flip side, the relief coffers of the state are now empty and should the floods repeat, there are no resources left to face the emergency. The usual game of blaming the centre for its insensitivity to the flood victims of Bihar remains an obvious corollary.

It should be recalled here that floodwaters contain a huge quantity of sediments and the management of sediments is more crucial than the management of water. Traditionally, floodwaters were allowed to spread over a vast area so that the sediments too spread over it and rejuvenated the fertility of the soil. Spreading of river water automatically leads to flood moderation and ensures natural land building by the rivers. The Water Resources Department of the state prevents the flooding of the plains leading to the various unmanageable complications stated earlier. The Disaster Management Department of the state along with all the donor agencies (national and international) and their NGOs do not take cognizance of such issues. The problem is how to route the silt and not how to route the water.

The preceding chapters have discussed how floods are caused and how the people respond to them. Most of the time and to most of the people outside assistance is not available when they need it most. Yet they survive and they have been surviving for generations. Nobody ever bothers to learn from them how they survive under such difficult conditions. But without having the basic knowledge of the people's survival mechanisms, some people and groups try to teach them disaster management, which is nothing but contempt for the people living in the flood plains for generations and an insult to their heritage of living in harmony with the rivers. This again is a donor-driven program and the arrogance of the donors is amply reflected in the fact that while each donor agency has its own disaster management guidelines or manual, none of them possesses a single document on the survival mechanisms of the local people. It is surprising that it has never occurred to any donor agency or the government that such studies should be conducted and made available to the field workers. It is too much to expect from an NGO to propose such a venture to their donors who are self-styled experts and even the ultimate authorities in their field by virtue of their resources.

The Secretary of the Disaster Management Department, GoB, issued a passionate appeal to the people of North Bihar through print media on the June 5, 2007 about the steps taken by the government to tackle the floods and had suggested that starting June 1,2007 (1) A team of 3 persons selected at the district level (NGOs/ volunteers of the Literacy Committee / other volunteers) will visit every village in a given time. (2) They will spend at least five days in the village and make vigorous contact with the villagers and tell them through various means about the government's programs, (3) They will ensure participation of the people and facilitate the formation of voluntary groups through a consultative process. (4) Will help prepare a Disaster Management Plan for the village, and (5) Immediately after the process is completed and the group members are identified, they will be called to a pre-decided place and training will be given to them on search, rescue and first aid for 2 or 3 days and the volunteers will then go back to their villages and practice a mock drill. His appeal encompassed the villages of Sitamarhi district also where the Water Resources Department of the state was extending embankments on the Bagmati. These embankments were badly smashed by the first rains of the season in June 2007. Obviously, the right hand of the government does not know, nor does it want to know, what the left hand is doing. One only hopes that the efforts of the

Secretary bear some fruit although the enthusiasm of the department appears to have subsided before the flood season of 2008.

10.11 Need to Learn Coping Mechanisms from the People

People living in the flood plains have, over centuries, made arrangements for food, fodder and fuel in the event of flood emergencies. They moved to safer places during emergencies. They designed houses to suit their local conditions. They named their new settlements Navtolia (new hamlet) after shifting there or Bhagalpur (abandoned village), when they were virtually driven away by a calamity. Their food habits were greatly influenced by the flood cycle and so was the cropping pattern. Stilt houses in the northeastern states or the terai of Nepal point toward the experience gained by the people over centuries. Most of these innovations are location specific and cannot be generalized. To say, however, that people need to be taught and nothing is to be learnt from them is *prima facie* absurd. For better results there is only a need to bring the computing skills of engineers closer to the life experiences of the masses as regards the rivers and their floods are concerned. Unfortunately, professionals have contempt for indigenous knowledge and the villagers view any educated and well-dressed person as one with ulterior motives and with suspicion. There is no attempt by anyone to bridge this gap.

10.12 Living with Floods

The preceding chapters have provided a glimpse of the flood and irrigation scene in the Kosi basin. Clearly the rains are not going to stop and the proposed dams, if at all they will be effective, are doubtful starters. They are not likely to be built in the near future. Even if they are built, it will take a long time to initiate the process. Do we have any interim plans to face the floods till such time as these dams are built? The answer is, no. That being the case, can we develop some means of facing the floods? Some people call it 'living with floods' and most people confuse this with inaction and total surrender to the forces of nature.

'Living with Floods' is a concept that must be learnt from the people and polished in the background of modern science. It does not mean inaction or total surrender to the natural forces but it surely means minimum interference with them. Some important components of the concept are discussed in this section.

Appreciating the Agricultural Problems

The flood water now stays for a long period in the countryside. Fields are normally dry in the month of November and sowing operations for the rabi crop start thereafter. With the snowmelt in the Himalayas by the end of May, many rivers start swelling with water and sometimes spread into the countryside. It would be ideal to develop crops that could be harvested during this period so that their water requirement can be met from the moisture content of the soil since irrigation through major schemes covers just 15 per cent of the geographical area of north Bihar. Most of the irrigation is done through ground water sources using diesel pumps which are very costly. Electricity supply is far too erratic and thoroughly unreliable and there seems to be no chance of improvement in the near future.

In some parts of north Bihar, people resort to multiple cropping as they sow green gram, maize and paddy simultaneously in February and March. Maize is at risk if there are early rains but the other two crops are harvested in time. The farmer never returns home empty-handed. Some attempts have been made in Bihar and eastern Uttar Pradesh to cultivate rabi crops in *chaurs*, or natural depressions where water accumulates and recedes before the sowing season. Attempts have also been made in some parts of Bihar to partially drain the *chaurs* into the nearby drainage systems and reclaim the land for rabi crops and use the available water for irrigation. Some experiments with new varieties of paddy (like Gautam) in the rabi season have yielded good results. There is a need to consolidate these efforts.

Experiments are also on in the flood plains of Uttar Pradesh to popularize the Narendra 97 paddy variety developed by Acharya Narendra Dev University of Uttar Pradesh. It can be sown in April after the fields are empty following the regular rabi season and harvested towards the end of July. It requires nominal irrigation and can withstand heat. Its yield is reported to be quite encouraging. Some NGOs in eastern Uttar Pradesh and northern Bihar have made significant gains in the production of this paddy. Another effort that has come to light is to plant mustard (Bhawani) during the post-flood period around the end of October when the floodwater has receded from a sizable amount of land. This sixty days crop can be harvested before the regular rabi crop is sown. Thus, three harvests emerge as a distinct possibility. If that could happen on a permanent basis much of the problems of the flood-prone areas could be solved. There is a need to innovate and consolidate such efforts.

In the case of repeated floods, paddy seedlings get drowned and spoiled. It takes about three weeks to sow the seeds again and rear them to transplantation levels. This delay affects the output. In Bangladesh, farmers prepare emergency seed beds on floating bamboo platforms and anchor them to some strong

object. In case the transplanted paddy is drowned, replantation becomes easy with the use of floating seedbeds.[49] There is a good scope for crops grown over sand cast lands like water melons, cucumbers, etc. Sand casting in fields following floods is a horrifying and depressing sight for farmers. Traditional growers of these crops can and have been of help in such ventures.

Flood Resistant Housing versus Flood Tolerant Housing

Bamboo, wood, thatch, paddy straw, various kinds of weeds, palm tree leaves and stems, and coconut leaves become basic building materials in the flood-prone areas. Sometimes the walls and roofs are plastered with mud which has to be replaced after the rainy season is over, if the house has been exposed to flowing water.

Bamboo is a wonderful building material. Whenever a village is trapped within floods or is exposed to breaches, almost the entire village is wiped out but the bamboo remains intact to narrate the tale of destruction. People in the northeast have used it admirably for the construction of floors, roofs and walls. They have used bamboos as stilts to support the house. Small floods pass under the floor of the structures without causing any damage. Lofts, within the houses, provide space for storing essentials that include fodder and fuel. Bamboo floors are plastered with mud to create space for cooking. A very small sized boat (around 4ft by 2.5ft) tied to the house provides space for grinding spices even when the flood water is passing underneath the floor of the house. Goats, chickens, ducks and piglets are kept in the verandas of the houses. Because the floor is made of bamboo matting, spraying a small quantity of water clears all the dust from the floor. All the important papers are carefully preserved by the people in the hollow of a bamboo container with a cap securely placed on the top. Even rice is preserved in such containers. No wonder, Kautilya in his *Arthashashtra*, suggested that floods could be tackled with the help of bamboo and boats.

Bamboo cultivation should be encouraged wherever possible in the flood-prone areas. Not only does it prevent colossal damages to human settlements, it comes to the people's rescue after the floods in constructing houses. Any other tree, which can withstand prolonged submergence, can be useful in the flooded areas because wood is needed for fuel.

Sanitation and Safe Drinking Water — A Challenge to Engineers

With the knowledge that is available today about the safe disposal of human excreta, it is not possible to prevent pollution of the surface or ground water in flooded or waterlogged conditions, at a very low and affordable cost. Use of latrines for defecation is more of an attitudinal problem in our villages than the costs involved in their construction. It has little to do with emergencies. But if latrines could be devised at a short notice at points where people flock for shelter during the flood season, it will be a great relief, at least to the women coming to the camps. Terracotta squatting pans are made by some organisations in Orissa and Maharashtra. They are cheap, affordable, can be manufactured locally and put to immediate use. Such toilets can take care of only the privacy part of the sanitation system but the pollution problem will remain. In the case of submergence of an entire area, all the disposal systems are underwater and little can be done to prevent the drains and the dead bodies from polluting the water in the river basins. Emphasis then shifts to drinking water.

Pollution of drinking water sources is a major problem in flooded areas. Wells have become obsolete, hand pumps get submerged and the floodwater, which most people are compelled to consume, is highly polluted. Chemical dosing of water cannot be organised on the scale that is needed. It involves money and imparting education to the flood victims about the methods and quantity of dosing. Boiling water is ruled out because fuel is scarce. Most floods are accompanied with rains and rainwater is safest to drink. Can our engineers devise some cheap and effective method of collecting rainwater in such places for consumption by the flood victims? Do we need the help of engineers at all for such simple things? Oil tins or troughs used for animal feed can be readily used for storing such water. Polythene sheets can be tied to the roofs of two houses and the collected water can be led to some container. These sheets are common relief material. If this is done, all that one has to do is so tell people to use the stored water for drinking and cooking purposes. This can be done easily if the people know in advance where they will move to in the case of an emergency. Once people see such methods of collecting rainwater and the need for it, the rest is simple. If there is safe water to drink, most of the post-flood ailments are automatically taken care of. Some NGOs have improved this simple method of harvesting rainwater in north Bihar.

Adjusting To The Flood Cycle

A good thing about floods in our country is that their period is well-defined. Can our schools, colleges and other educational institutions have their annual holidays during this period? The students of medical and veterinary colleges can be deployed in the flooded areas for treating minor ailments and given some credit for their involvement. This is a practice in Assam

and some other states where the flood victims do get medical assistance at the time of their need. These young men and women are quite enthusiastic about working in such emergencies.

In areas that are flooded over long periods, floating postal and banking services can be provided to the affected people, by rotation, using boats. Floating banking services were in fact provided until recently in the Sunderbans.

Neglected Cattle

Cattle are often ignored in any planning for meeting floods contingencies. Meeting their demands needs extra care. Fodder and medicine for cattle is an important emergency input. Surviving on inedible things and standing in water for prolonged durations become their routine.

Living with Embankments

The failure of embankments, both literally and otherwise, affects the normal life of people living within them as well as outside them. Protecting embankments is primarily the job of the concerned departments. There is, however, a dilemma here. If the embankments are firm and if the engineers are designing them to remain firm, the life of the people living within them is at stake and their lot can improve only if they breach. If the embankments breach then the people outside suffer. The choice, in fact, is very limited.

It is essential, therefore, that inundation maps of the area are prepared for every possible breach along the embankment length and also for every depth of flooding within them. For the sake of convenience this mapping can be done at an interval of every 3 km. on the embankment. Thus if the eastern Kosi embankment is 126 km. long, there will be roughly about 40 points for which the inundation maps will have to be prepared. Once this is done, it will be possible to identify the locations, which could act as flood shelters. The necessary infrastructure may have to be developed here providing all the essential facilities like drinking water, sanitation, food, fodder, fuel and first-aid, etc. for people and their cattle. This will prevent panic exodus of people for help. The necessary facilities can be provided at these points. A large number of primary schools, mostly stilted structures, were built in West Bengal following the floods of 1978 and are reportedly put to good use during the floods.

Inundation maps are also needed for the communities living within the embankments. If they are firm and sturdy, the flood levels within them will rise and the people may have to shift to safer places. In fact, a good number of people shift on to the embankments themselves. In such cases, adequate arrangements for living should be made available on the embankments.

Inundation maps can help identify dry locations where people can take shelter, reducing the usual chaotic response and improving relief administration. Once the people are resettled there can be better organization of relief operations, thereby reducing the chances of corruption. Involving Panchayati Raj institutions could further reduce the crisis.

The decision whether to plug the gap caused after the breach should be left to the dwellers in the vicinity.

Flood Warning System

All these efforts will be wasted if they are not supported by a well-built system of warning about a possible flood or a breach. The use of electronic media, TV and radio is of immense importance and loud speakers have also been used for flashing messages. A lot of temples and mosques have loud speakers. One can influence the priests or the Imams to issue warnings in emergencies. Involving the Panchayats in flood warning mechanisms would be a welcome step.

Unfortunately there are no means to predict breaches in the embankments and flash messages for the benefit of the downstream people. The Water Resources Department, in an attempt to save its own skin underplays such events and the affected people are subject to untold miseries. Disaster managers shy away from raising this point in their dialogues with the authorities. There seems to be no dialogue between the two departments of the state as the Water Resources Department stores disaster for the Disaster Management Department which, in turn, mitigates it without making any fuss.

Long Term Problems

Food, shelter and clothing are the basic needs of a person. What is the amount of money that is needed to construct a hut of 3 m by 4 m size that is washed away annually during the floods? Just to retain a thatched roof over the head of a family, one able-bodied person in a family has to look for employment in some town and all his savings are spent on keeping this enclosure in place. If the family possesses an acre of the land, then to meet their agricultural expenses another member of the family has to sleep on the pavements elsewhere. Not many families in north Bihar, however, possess an acre of land and even if they do, much of it is lost to waterlogging, erosion or sand casting. That explains the mass exodus of labour that takes place from north Bihar every year and no amount of relief distribution or disaster management can solve this problem. The government and all the political parties firmly believe that all these downstream

problems can be solved if, and only if, the rivers entering the plains from the hills are dammed. Leaders talk about the Barahkshetra Dam even if there is a flood in the Gandak or the Mahananda basin. The relationship between the Gandak, the Mahananda or the Kosi is best known to the politicians of the state. The Kosi was not in spate during the floods of 2004 but the Barahkshetra Dam got the headlines. Unfortunately these views are also shared by a majority of the people.

Before we embark upon these dams, do we have the courage to honestly evaluate our already completed water development projects in the context of their stated objectives, time frame and costs? It will help people in making up their own judgements. Curiously enough such reports are prepared every year by the concerned departments but never made public. This is essential because the promises can only be judged in the background of performances. The million dollar question is whether this will ever be done.

The Need for a Massive Awareness Campaign

Unfortunately the public is not aware of the realities of the water-related structures and pins its hopes on the illusionary dams in Nepal. Unless this mist is cleared, the people's initiative will not take shape. There is a need to educate the people about the futility of the dams in Nepal and also about the limits of the technology of flood control as we have already seen earlier. Every structural intervention has a price which is never debated and the people are given an impression that every thing will be all right once this or that is done. We have seen this in the case of the embankments and also that those who pushed the idea were aware of the consequences but concerted efforts were made to throttle the debate before their construction began. The same thing is going to happen in the case of the proposed dams in Nepal or with the interlinking of Indian rivers. And is interlinking of rivers in Bihar possible without building dams or such structures in Nepal?

A dialogue has to begin at all the possible levels, i.e., at the level of the common people, village level workers, engineers, bureaucrats, and the politicians. Needless to say, it is very difficult to educate the educated. Engineers and bureaucrats have fixed ideas and it is difficult, if not impossible, to convince them of anything. Engineers are slightly on the defensive these days because all that they have said so boldly until a few years ago, does not seem to be working, or at least the stated objectives of the projects are not being achieved in most cases. Many retired engineers, perhaps as a penance, support a dialogue with the people.

It is necessary to remember that the illiteracy rate of the target population is very high and the print media is irrelevant for the majority. Some sections of the population can be reached through the vernacular press and only a tiny fraction through English. When it comes to educating masses over the issue, all forms of communication will have to be tried. The time has come now to start this task on a priority basis. The initiative should come from the government and there is nothing wrong in telling people that floods cannot and should not be controlled. Should that happen, the governments would not have to blame rats, foxes and muskrats or 'anti-social elements' for the floods. It will not have to blame Nepal for causing floods in the plains nor will it have to blame the centre for the debacle. The people are also entitled to know the possible consequences of any project because these are made for them and with their resources.

A word of caution regarding educating people: sometimes ridiculous proposals are made to combat floods. A flood seminar was held in Samastipur in 1956. The need for it arose because the Burhi Gandak was being embanked at a frantic pace. The construction work, however, was going on only on one side of the river and when the rains struck, most of the flood water spilled over to the other side. There was a deluge in those areas. A participant at the seminar made a suggestion that mountains of earth should be raised along the Bay of Bengal so that all the rain falls on the sea. There would not be any rains falling on Bihar and there would not be any need for flood protection. The person who said this obviously did not know what he was saying but the newspapers found the proposition worth reporting.

Another suggestion is often made that the Kosi is trying to carve a course for itself by moving eastward and before the river does that why not construct an embankment parallel to the present eastern embankment and prevent the further shifting of the river. The proponents of this proposal insist that by so doing it would be possible to artificially control the land building process of the river. They forget that the people living in the vicinity of the embankments are well aware of the sufferings of the people trapped within the existing embankments of the Kosi. They will not permit any government to use them as guinea pigs unless the establishment resorts to massive repression. The problem with most of the engineers is that they see the rivers and the embankments but fail to appreciate that people also live there.

Another proposal that came after the floods of 1987 was to build a bund along the Indo-Nepal border so that all the water flowing from Nepal could be prevented from entering Indian territory. Such suggestions not only reflect a lack of understanding of the nature of water, they are also devoid of common sense. The advice does not end there. Suggestions are

even made to construct the Barahkshetra Dam at Birpur to control the Kosi floods. Obviously the proponent neither knows what a dam is nor the topography at Birpur.

Dwarf embankments, like the ones that existed in Burdwan district of West Bengal, could surely be thought of but that was purely a people's initiative and the government was in no way involved in their construction or functioning. The government was only instrumental in destroying them. Such innovative ideas cannot be pursued by an indifferent technocracy.

Similar proposals are made about re-sectioning the rivers. Re-sectioning is possible on small streams with nominal silt loads. It is simply not possible for large rivers like the Kosi as it is difficult to locate disposal grounds for the excavated sand. This issue has been discussed elsewhere.[50]

To say that modern science has worked wonders since it can send human beings to the moon and that flood control should be a simple matter may not be correct. Science has its own limitations which suggest that as far as possible a path of least resistance should be followed with rivers and their floods and that people should attempt to live in harmony with nature. The hard reality is that the government, the bureaucracy, engineers, political parties and the Water Resources Department do not want the people to become aware of the water issues.

Whether this is possible or remains a wishful thinking is a different story as observed by Prof. CP Sinha, Former Professor of Civil Engineering, IIT-Roorkee and Member Secretary, Second Bihar Irrigation Commission, "The Government, particularly the Government of Bihar, appears to be lacking in sensitiveness towards the problems of water resources in Bihar. Many a times it has been seen that it is not adequately responsive to serious problems. The existence of 380 villages with a population of nearly a million people within the two embankments of the Kosi is a matter of shame to any civilized society. The inability to rehabilitate them even fifty years after of the construction of the embankments is disgraceful.

...So far no tangible solution has been found to the recurrent problem of severe floods that cause immense miseries to the people in north Bihar. The condition of irrigation and drainage is no better. The first Bihar Irrigation Commission was constituted in 1967 and its report was published in 1971. Many of its recommendations have never been implemented. They were re-examined by the Second Bihar Irrigation Commission constituted in 1991. Its recommendations were published in 1994. The technical recommendations of this report also suffered the same fate as the first one. The reasons for this were never explained to the concerned people. On many matters of public interest, the Government is found concealing or suppressing information, which sometimes creates great confusion. The Government very often does not learn lesson from its past mistakes and exhibits no concern for posterity, which is so vital for sustainable development."

Key Role of Engineers in Flood Mitigation

The concept of living with floods is yet to develop in the changed circumstances and no serious work seems to have been done so far in modern societies except to talk about flood plain zoning. Flood Plain Zoning (FPZ) is not likely to be of much help in north Bihar as the land is virtually flat. It is a regulatory measure to restrict building activity in flood plains so as to minimize losses. A large section of people believe that development activity within the state would come to a grinding halt if the Government accepts the proposal of Flood Plain Zoning in Bihar. Unless the craze for structural solutions to the problems of floods is shelved, no serious inputs are likely to be made either. This is the challenge for engineers. Can they provide a glass of potable water in the flood situation depicted earlier? Will they simplify the technology to a common person's level? Will they ever realise that the poor have subsidised their education?

All our efforts should be diverted towards making the floods bearable and attempts should be made to convert the water, which has become a liability, into an asset. Let us decide honestly what is feasible and what is not. There is no cure for cancer or AIDS till now say the doctors and everybody believes them. The doctors enjoy that freedom to tell people the truth because they have never allowed the ghosts of Dhanwantari, Charak or Shushrut to haunt them. Society does not give the same freedom to engineers to speak the truth. It has bestowed the title of creators on them; they are known as Bhagiraths and Vishwakarmas. Unfortunately engineers have accepted those positions and most of the mistakes are committed in trying to keep the image intact.

Engineers design structures for a 25, 50 or a maximum of a 100 years life span and according to them the calamity for which the structure has been designed, or an even worse one, may hit tomorrow. That puts a severe restriction on structural solutions for controlling floods. The design specifications of the structures, as a rule, come up for discussion only after the calamity has struck. The resulting situation has to be faced by the society which has to keep itself prepared. No government or NGO reaches the people when they need them the most and no individual or a community depends on any government or an NGO for its survival. Will the engineers state where their role ends and the society has to take over from them? Is the society prepared for such a role and does it know

its cost? Is it possible to discuss this part of any project before it is too late?

Structural measures to deal with floods make rivers more destructive as we have seen in the case of embankments. Dams are no different. Maharashtra and Gujarat are the two most dammed states of the country. Yet both the states suffered heavy floods in 2005 and 2006. Their utility has come into scrutiny. Vested interests in the field of construction push these structures for their own gains at the cost of the people. Unless the victims start questioning the efficacy of these structures they will continue to suffer.

10.13 Conclusion

There is no readymade solution to the problems faced by the people but a beginning has to be made somewhere. The problems of flooded areas are entirely different from those of drought-hit areas. In fact, it is the mirror image of the drought. It is possible to work in a small watershed in the drought area but in the flooded areas, water may enter from different sides. One has to think of a regional approach or at least a cluster approach. There is a lot of indigenous knowledge available at the village level in the flood areas that remains to be tapped and improved in the background of modern sciences. One has to make an attempt to create Ralegan Siddhis in the flood-prone areas that are looking for some Messiah to lead them. The sooner it is done the better.

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गाधिराज सुते देवि विश्वामित्र मुनेः श्वसः
ऋचीक भार्ये सत्यार्ये पापम् मे हर कौशिकी।

O daughter of Gadhiraj, sister of sage
Vishwamitra and truthful wife of seer Richeek,
goddess Kaushiki (river Kosi),
absolve me of all my sins!